

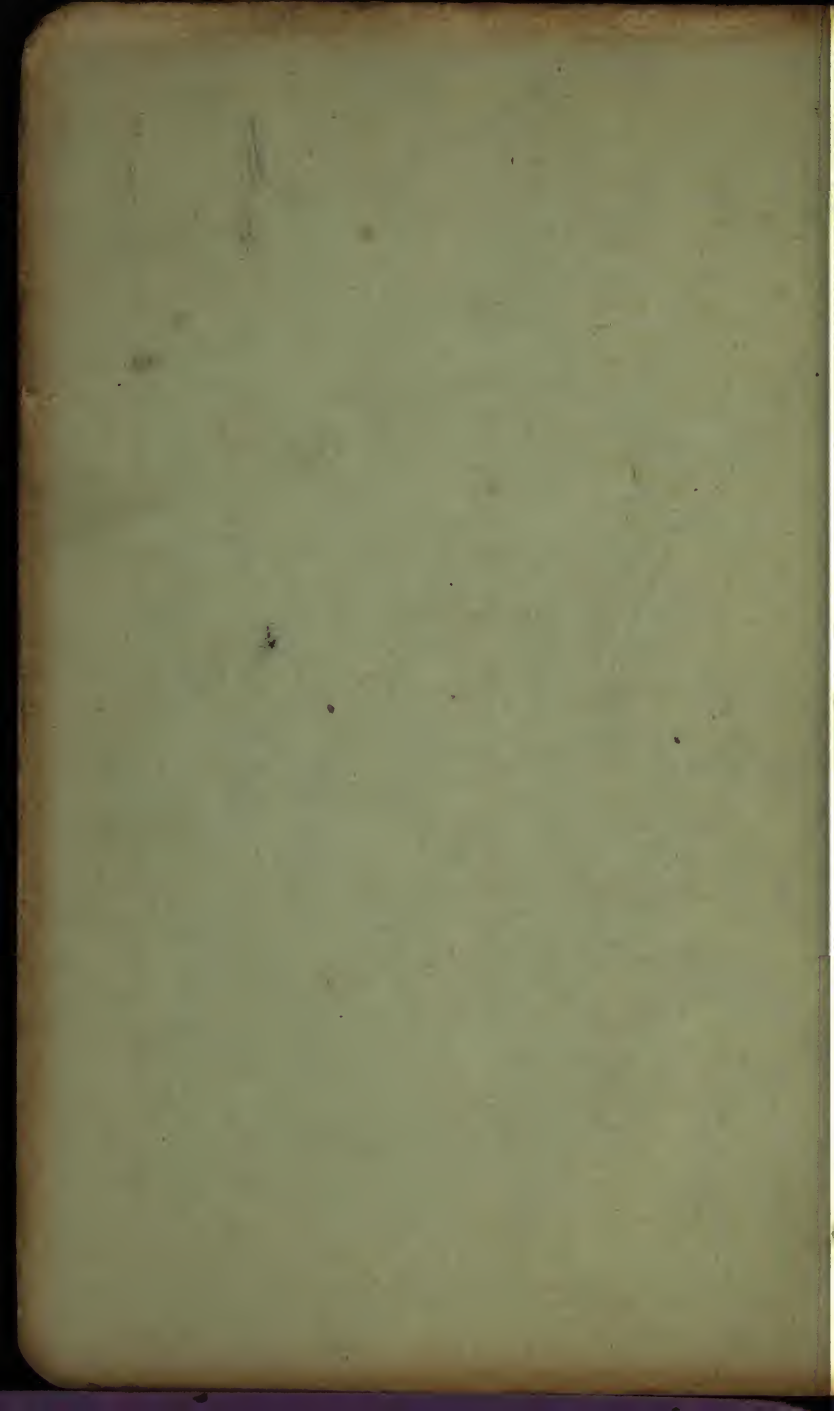
HARRY L DOTEN & SONS

76
SHEET METALS

109 CROSS ST.

BOSTON MASS.

Doten



HARRY L. DOTEN & SONS

SHEET METALS



TELEPHONE

RICHMOND 4890

109-111 CROSS STREET

BOSTON, MASS.

IT IS OUR DESIRE in presenting this catalogue to acquaint you with the various lines of material carried in stock, listing only the Standard sizes which we intend to have on hand at all times.

If you do not find what you require we will be glad to try to procure same for you. Special sizes of Steel or Metal Sheets can be obtained from Mill and Tools and Machines not shown can be supplied promptly from the Manufacturer.

As new lines or sizes are added sheets will be issued to be inserted in their respective places.

It is hoped that this catalogue, with the Tables and General Information, will prove useful and convenient for reference. Any suggestions increasing its value will be welcome.

JUNE, 1927

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TABLE SHOWING THE DIFFERENT WIRE GAUGES

No.	Stubbs' or Birmingham	Brown & Sharpe's	U. S. Standard Gauge	American Steel and Wire Co's.	No.
0000	.454	.460	.40625	.393	0000
000	.425	.40964	.375	.362	000
00	.380	.36480	.34375	.331	00
0	.340	.32495	.3125	.307	0
1	.300	.28930	.28125	.283	1
2	.284	.25763	.265625	.263	2
3	.259	.22942	.25	.244	3
4	.238	.20431	.234375	.225	4
5	.220	.18194	.21875	.207	5
6	.203	.16202	.203125	.192	6
7	.180	.14428	.1875	.177	7
8	.165	.12849	.171875	.162	8
9	.148	.11443	.15625	.148	9
10	.134	.10189	.140625	.135	10
11	.120	.09074	.125	.120	11
12	.109	.08081	.109375	.105	12
13	.095	.07196	.09375	.092	13
14	.083	.06408	.078125	.080	14
15	.072	.05706	.0703125	.072	15
16	.065	.05082	.0625	.063	16
17	.058	.04525	.05625	.054	17
18	.049	.04030	.05	.047	18
19	.042	.03589	.04375	.041	19
20	.035	.03196	.0375	.035	20
21	.032	.02846	.034375	.032	21
22	.028	.025347	.03125	.028	22
23	.025	.022571	.028125	.025	23
24	.022	.0201	.025	.023	24
25	.020	.0179	.021875	.020	25
26	.018	.01594	.01875	.018	26
27	.016	.014195	.0171875	.017	27
28	.014	.01264	.015625	.016	28
29	.013	.011257	.0140625	.015	29
30	.012	.010025	.0125	.014	30
31	.010	.008928	.010985	.0135	31
32	.009	.00795	.01045625	.013	32
33	.008	.00708	.009375	.011	33
34	.007	.0063	.00859375	.010	34
35	.005	.00561	.0078125	.0095	35
36	.004	.005	.00703125	.009	36
37	....	.00445	.00664062	.0085	37
38	....	.003965	.00625	.008	38

UNITED STATES STANDARD GAUGE AND WEIGHTS

Wire gauge	Approximate thickness in fractions of an inch	Approximate thickness in decimal parts of an inch	Weight per square foot in ounces avoirdupois	Weight per square foot in pounds avoirdupois
0000000	1-2	.5	320	20.
000000	15-32	.46875	300	18.75
00000	7-16	.4375	280	17.50
0000	13-32	.40625	260	16.25
000	3-8	.375	240	15.
00	11-32	.34375	220	13.75
0	5-16	.3125	200	12.50
1	9-32	.28125	180	11.25
2	17-64	.265625	170	10.625
3	1-4	.25	160	10.
4	15-64	.234375	150	9.375
5	7-32	.21875	140	8.75
6	13-64	.203125	130	8.125
7	3-16	.1875	120	7.5
8	11-64	.171875	110	6.875
9	5-32	.15625	100	6.25
10	9-64	.140625	90	5.625
11	1-8	.125	80	5.
12	7-64	.109375	70	4.375
13	3-32	.09375	60	3.75
14	5-64	.078125	50	3.125
15	9-128	.0703125	45	2.8125
16	1-16	.0625	40	2.5
17	9-160	.05625	36	2.25
18	1-20	.05	32	2.
19	7-160	.04375	28	1.75
20	3-80	.0375	24	1.50
21	11-320	.034375	22	1.375
22	1-32	.03125	20	1.25
23	9-320	.028125	18	1.125
24	1-40	.025	16	1.
25	7-320	.021875	14	.875
26	3-160	.01875	12	.75
27	11-940	.0171875	11	.6875
28	1-64	.015625	10	.625
29	9-640	.0140625	9	.5625
30	1-80	.0125	8	.5
31	7-640	.0109375	7	.4375
32	13-1280	.01015625	6½	.40625
33	3-320	.009375	6	.375
34	11-1280	.00859375	5½	.34375
35	5-640	.0078125	5	.3125
36	9-1280	.00703125	4½	.28125
37	17-2560	.006640625	4¼	.265625
38	1-160	.00625	4	.25

BLUE ANNEALED STEEL SHEETS

Gauge	Size in Stock	Average Weight per Sht.	Shts. per Bdle.		Gauge	Size in Stock	Average Weight per Sht.	Shts. per Bdle.
10	24 x 96	92	x		12	60 x 96	175	x
	24 x 120	115	x			60 x 120	224	x
	30 x 96	115	x			60 x 144	268	x
	30 x 120	144	x		14	24 x 96	51	3
	36 x 72	104	x			26 x 96	56	3
	36 x 84	121	x			28 x 96	58	3
	36 x 96	138	x			30 x 96	64	2
	36 x 120	173	x			30 x 120	80	2
	36 x 144	207	x			36 x 84	66	2
	42 x 96	161	x			36 x 96	77	2
	42 x 120	201	x			36 x 120	96	2
	42 x 144	241	x			42 x 96	90	2
	48 x 84	161	x			42 x 120	112	2
	48 x 96	184	x			48 x 84	90	x
	48 x 120	230	x			48 x 96	102	x
	48 x 144	276	x			48 x 120	128	x
	54 x 96	209	x			54 x 120	142	x
	54 x 120	258	x			54 x 144	170	x
	54 x 144	310	x		16	60 x 96	125	x
	60 x 96	230	x			60 x 120	156	x
	60 x 120	287	x			60 x 144	188	x
	60 x 144	345	x			24 x 96	41	4
12	72 x 96	270	x			24 x 120	51	3
	72 x 120	345	x			26 x 96	45	3
	72 x 144	414	x			28 x 96	48	3
	24 x 96	72	x			30 x 96	51	3
	24 x 120	89	x			30 x 120	64	2
	26 x 96	78	x			36 x 84	54	3
	28 x 96	84	x			36 x 96	62	2
	30 x 96	90	x			36 x 120	77	2
	30 x 120	112	x			42 x 96	72	2
	36 x 84	94	x			42 x 120	90	2
	36 x 96	108	x			48 x 84	72	x
	36 x 120	142	x			48 x 96	82	x
	36 x 144	161	x			48 x 120	102	x
	42 x 96	125	x			54 x 96	90	x
	42 x 120	159	x			54 x 120	113	x
	48 x 84	125	x			54 x 144	135	x
	48 x 96	143	x			60 x 96	100	x
	48 x 120	179	x			60 x 120	125	x
	48 x 144	215	x			60 x 144	150	x
	54 x 120	202	x					
	54 x 144	241	x					

x Signifies that size is not made up in bundles on account of difficulty in handling.

ONE PASS COLD ROLLED AMERICAN BESSEMER

Gauge	Size in Stock	Average Weight per Sht.	Shts. per Bdle.		Gauge	Size in Stock	Average Weight per Sht.	Shts. per Bdle.
18	24 x 96	32.0	5		24	24 x 96	16.0	9
	26 x 96	34.7	4			26 x 96	17.3	9
	28 x 96	37.3	4			28 x 96	18.7	8
	30 x 96	40.0	4			30 x 96	20.0	7
	30 x 120	50.0	3			36 x 96	24.0	6
	36 x 96	48.0	3			36 x 120	30.0	5
	36 x 120	60.0	2			48 x 96	32.0	5
	42 x 96	56.0	3			48 x 120	40.0	4
	42 x 120	70.0	2		26	24 x 96	12.0	12
	48 x 96	64.0	2			26 x 96	13.0	11
20	48 x 120	80.0	2			28 x 96	14.0	11
	24 x 96	24.0	6			30 x 96	15.0	10
	26 x 96	26.0	6			36 x 96	18.0	8
	28 x 96	28.0	5		28	24 x 96	10.0	15
	30 x 96	30.0	5			26 x 96	10.8	14
	36 x 96	36.0	4			28 x 96	11.7	13
	36 x 120	45.0	3			30 x 96	12.5	12
	48 x 96	48.0	3			36 x 96	15.0	10
	48 x 120	60.0	3		30	30 x 96	10.0	15
22	24 x 96	20.0	7					
	26 x 96	21.7	7					
	28 x 96	23.3	6					
	30 x 96	25.0	6					
	36 x 96	30.0	5					
	36 x 120	37.5	4					
	48 x 96	40.0	4					
	48 x 120	50.0	3					

SPECIAL SIZES as well as stock sizes
can be furnished from the mill.

Shipment dependent on mill conditions.

DOTEN CLEANED REFINED SHEETS

Gauge	Size in Stock	Average Weight per Sht.	Shts. per Bdle.		Gauge	Size in Stock	Average Weight per Sht.	Shts. per Bdle.
18	24 x 96	32.0	5		24	24 x 84	14.0	11
	26 x 96	34.7	4			24 x 96	16.0	9
	28 x 96	37.3	4			26 x 84	15.2	10
	30 x 96	40.0	4			26 x 96	17.3	9
	36 x 96	48.0	3			28 x 84	16.3	9
20	24 x 96	24.0	6			28 x 96	18.7	8
	26 x 96	26.0	6			30 x 84	17.5	8
	28 x 96	28.0	5			30 x 96	20.0	7
	30 x 96	30.0	5			36 x 96	24.0	6
	36 x 96	36.0	4		26	24 x 84	10.5	14
22	24 x 96	20.0	7			24 x 96	12.0	12
	26 x 96	21.7	7			26 x 84	11.4	13
	28 x 96	23.3	6			26 x 96	13.0	11
	30 x 84	21.9	7			28 x 84	12.3	12
	30 x 96	25.0	6			28 x 96	14.0	11
	36 x 96	30.0	5			30 x 84	13.1	11
						30 x 96	15.0	10
						36 x 96	18.0	8
					28	28 x 96	11.7	13
						30 x 96	12.5	12

A SMOOTH PLIABLE REFINED BLACK IRON
TOUGH—SOFT—LEVEL
FREE FROM BUCKLES PERFECTLY CLEANED
AN EXCELLENT ELBOW IRON

POLISHED STEEL SHEETS

Gauge	Size in Stock	Average Weight per Sht.	Shts. per Bdle.		Gauge	Size in Stock	Average Weight per Sht.	Shts. per Pack
24	28 x 96	18.7	8		24	28 x 60	11.7	26
26	28 x 96	14.0	11			28 x 96	18.7	16
						30 x 84	17.5	17
						30 x 96	20.0	15
The following are in packs of about 300 lbs. each.					25	28 x 60	10.2	30
Gauge	Size in Stock	Average Weight per Sht.	Shts. per Pack			28 x 60	8.8	35
20	30 x 96	30.0	10		26	30 x 84	13.1	23
22	30 x 84	21.9	14					



OPEN HEARTH AUTO BODY STOCK

PICKLED, FULL COLD ROLLED, WHITE FINISH
PATENT LEVELLED

10 30" x 120"

36" x 120"

42" x 120"

48" x 120"

12 30" x 120"

36" x 120"

42" x 120"

48" x 120"

18 36" x 96"

36" x 120"

20 36" x 96"

36" x 120"

22 36" x 96"

36" x 120"

DEEP DRAWING SHEETS

FULL PICKLED, COLD ROLLED, REANNEALED
WHITE FINISH

Gauge	Decimal	Size	Approx- Weight per Sq. Ft.	Gauge	Decimal	Size	Approx- Weight per Sq. Ft.
13	.093"	36" x 96"	3.75	20	.037"	36" x 96"	1.50
14	.078"	36" x 96"	3.125	21	.034"	36" x 36"	1.375
15	.07"	36" x 96"	2.81	22	.031"	36" x 96"	1.25
16	.0625"	36" x 96"	2.50	23	.028"	36" x 96"	1.125
17	.056"	36" x 96"	2.25	24	.052"	36" x 96"	1.00
18	.05"	36" x 96"	2.00	25	.021"	36" x 96"	.875
19	.043"	36" x 96"	1.75	26	.018"	36" x 96"	.75

GALVANIZED STEEL SHEETS

Gauge	Size in Stock	Average Weight per Sht.	Shts. per Bdle.		Gauge	Size in Stock	Average Weight per Sht.	Shts. per Bdle.
10	36 x 96	138.8	x		20	24 x 96	26.5	6
	36 x 120	173.4	x			26 x 96	28.7	5
	48 x 96	184.0	x			28 x 96	30.9	5
	48 x 120	231.2	x			30 x 96	33.1	5
12	24 x 96	72.5	2			30 x 120	41.4	4
	30 x 96	90.6	2			36 x 96	39.8	4
	36 x 96	108.8	x			36 x 120	49.7	3
	36 x 120	135.9	x			48 x 96	53.0	3
	48 x 96	145.0	x			48 x 120	66.2	2
	48 x 120	181.2	x		22	24 x 96	22.5	7
14	30 x 96	65.6	2			26 x 96	24.4	6
	36 x 96	78.8	2			26 x 120	30.5	5
	36 x 120	98.4	x			28 x 84	23.0	7
	48 x 96	105.0	x			28 x 96	26.3	6
	48 x 120	131.2	x			30 x 84	24.6	6
16	24 x 96	42.5	4			30 x 96	28.1	5
	26 x 96	46.0	3			30 x 120	35.2	4
	28 x 96	49.6	3			36 x 96	33.8	5
	30 x 96	53.1	3			36 x 120	42.2	4
	36 x 96	63.8	2			48 x 96	45.0	3
	36 x 120	79.7	2			48 x 120	56.2	3
	48 x 96	85.0	2		24	24 x 84	16.2	9
	48 x 120	106.2	x			24 x 96	18.5	8
18	24 x 96	34.5	4			24 x 120	23.1	7
	26 x 96	37.4	4			26 x 84	17.5	8
	28 x 96	40.3	4			26 x 96	20.0	8
	30 x 96	43.1	4			28 x 84	18.9	8
	30 x 120	53.9	3			28 x 96	21.6	7
	36 x 96	51.8	3			30 x 84	20.2	7
	36 x 120	64.7	2			30 x 96	23.1	7
	48 x 96	69.0	2			30 x 120	28.9	5
	48 x 120	86.2	2			32 x 96	24.7	6
						36 x 84	24.3	6
						36 x 96	27.8	6
						36 x 120	34.7	5
						40 x 96	30.9	5
						42 x 96	32.4	5
						48 x 96	37.0	4
						48 x 120	46.2	3

x Signifies that size is not made up in bundles on account of difficulty in handling.

GALVANIZED STEEL SHEETS

Gauge	Size in Stock	Average Weight per Sht.	Shts. per Bdle.		Gauge	Size in Stock	Average Weight per Sht.	Shts. per Bdle.
26	24 x 84	12.7	12		28	24 x 84	10.9	14
	24 x 96	14.5	10			24 x 96	12.5	12
	24 x 120	18.1	8			24 x 120	15.6	10
	26 x 84	13.7	11			26 x 84	11.8	13
	26 x 96	15.7	10			26 x 96	13.5	11
	26 x 120	19.6	8			28 x 84	12.8	12
	28 x 84	14.8	10			28 x 96	14.6	10
	28 x 96	16.9	9			30 x 84	13.7	11
	28 x 120	21.1	7			30 x 96	15.6	10
	30 x 84	15.9	10			30 x 120	19.5	8
	30 x 96	18.1	8			36 x 84	16.4	9
	30 x 120	22.7	7			36 x 96	18.8	8
	36 x 84	19.0	8			36 x 120	23.4	7
	36 x 96	21.8	7		30			
	36 x 120	27.2	6			30 x 96	13.1	11
	40 x 96	24.2	6			36 x 120	19.7	8
	48 x 120	36.3	4					

GALVANIZED TONCAN METAL

Gauge	Size in Stock	Average Weight per Sht.	Shts. per Bdle.		Gauge	Size in Stock	Average Weight per Sht.	Shts. per Bdle.
16	30 x 96	53.1	3		24	24 x 96	18.5	8
	36 x 96	63.8	2			26 x 96	20.0	8
18	30 x 96	43.1	4			28 x 96	21.6	7
	36 x 96	51.8	3			30 x 96	23.1	7
20						36 x 96	27.8	6
	24 x 96	26.5	6		26	24 x 96	14.5	10
	26 x 96	28.7	5			26 x 96	15.7	10
	28 x 96	30.9	5			28 x 96	16.9	9
	30 x 96	33.1	5			30 x 96	18.1	8
	36 x 96	39.8	4			36 x 96	21.8	7
22	24 x 96	22.5	7		28	24 x 96	12.5	12
	26 x 96	24.4	6			26 x 96	13.5	11
	28 x 96	26.3	6			28 x 96	14.6	10
	30 x 96	28.1	5			30 x 96	15.6	10
	36 x 96	33.8	5			36 x 96	18.8	8

ENDURO STAINLESS IRON SHEETS

SUITABLE FOR POLISHING

10—36 x 120
42 x 120
48 x 120

12—36 x 120
42 x 120
48 x 120

14—36 x 120
42 x 120
48 x 120

16—36 x 120
42 x 120
48 x 120

18—30 x 96
36 x 96

20—30 x 96
36 x 96

POLISHED ONE SIDE

22—30 x 96
36 x 96

24—30 x 96
36 x 96

THE NEWEST AND BEST PRODUCT TO RESIST CORROSION
HAVING A RARE COMBINATION OF PHYSICAL STRENGTH
AND WORKABILITY AT A REASONABLE PRICE

WRITE FOR FURTHER INFORMATION

LEAD COATED SHEETS

LONG TERNES

SOFT STEEL, COATED WITH LEAD AND TIN

Suitable for the manufacture of
Automobile Fenders, Hoods and Mud Guards

Soft, Smooth and Pliable

Gauge	Size in Stock	Weight per Sheet	Sheets per Bundle
18	36 x 96	51.8	3
20	36 x 96	39.8	4
22	30 x 96	28.1	5
22	36 x 96	33.8	5
24	36 x 96	27.8	6
26	36 x 96	21.8	7
28	36 x 96	15	10

GALVANIZED CORRUGATED SHEETS

2½" STANDARD CORRUGATIONS



GALVANIZED STEEL

Gauge	Size	Sq. Ft. Per Sheet	Sheets Per Square
22	26 x 96	17½	5.77
	26 x 120	21½	4.62
24	26 x 96	17½	5.77
	26 x 120	21½	4.62
26	26 x 72	13	7.96
	26 x 84	15½	6.59
	26 x 96	17½	5.77
	26 x 108	19½	5.13
	26 x 120	21½	4.62
	26 x 144	26	3.85
28	26 x 72	13	7.96
	26 x 84	15½	6.59
	26 x 96	17½	5.77
	26 x 108	19½	5.13
	26 x 120	21½	4.62
	26 x 144	26	3.85

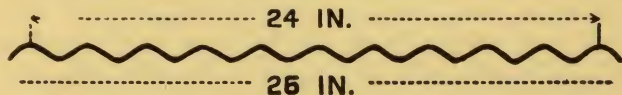
TONCAN GALVANIZED

Gauge	Size	Sq. Ft. Per Sheet	Sheets Per Square
26	26 x 72	13	7.96
	26 x 84	15½	6.59
	26 x 96	17½	5.77
	26 x 108	19½	5.13
	26 x 120	21½	4.62

Approximate weights
per square

Gauge	*28	*26	*24	*22
Galv.	85	98	124	151

All sheets are 26" wide but cover 24" when placed in position. This must be considered when measuring surface to be covered, and when ordering.

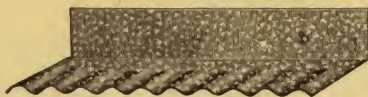


CORRUGATED WOOD STRIPS



Strips 48" long 3" wide
Approximate weight of 100 lineal feet, 76 lbs.

GALVANIZED CORRUGATED END WALL FLASHING



2½" Corrugations

No. 26 Gauge 12" x 26½"

Weight per 100 lineal feet, 98 lbs.

GALVANIZED CORRUGATED SIDE WALL FLASHING



2½" Corrugations

No. 26 Gauge 12" x 96"

Weight per 100 lineal feet, 92 lbs.

GALVANIZED PLAIN RIDGE ROLL



Roll 2½"

Apron 3"

Girth 12"

Length 96"

No. 26 Gauge, Weight per lineal foot, 95 lbs.

No. 28 Gauge, Weight per lineal foot, 82 lbs.

GALVANIZED CORRUGATED RIDGE ROLL



2½" Corrugations

Roll 2½"

Apron 4½"

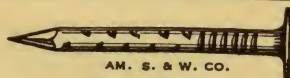
Girth 14½"

Length 26"

No. 26 Gauge, Weight per lineal foot, 115 lbs.

No. 28 Gauge, Weight per lineal foot, 94 lbs.

GALVANIZED BARBED ROOFING NAILS



AM. S. & W. CO.

Actual Size

1 1/2" long Takes 1 1/4 lbs. for 1 Square

LEAD WASHERS



FULL SIZE.



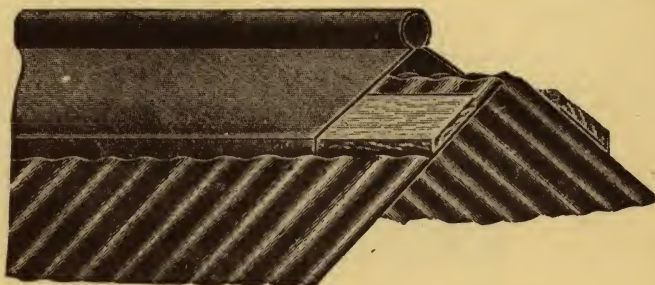
1/2" Outside Diameter 1/8" Hole
Takes 1 lb. for 2 to 3 Squares

GALVANIZED SHEET ROOFING FASTENERS

For Corrugated Sheets when used on metal frame

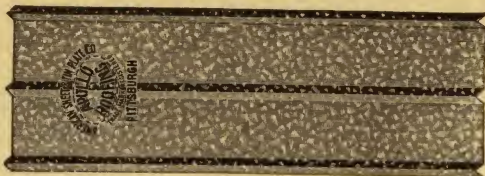


Size	3"	4"	6"	8"	9"	10"	long.	No. 10 Gauges
No. to 1 lb.	82	60	40	30	27	24.		



Showing how Plain Ridge Roll is combined with Corrugated Sheets by the use of Corrugated Wood Strips.

GALVANIZED THREE V CRIMPED

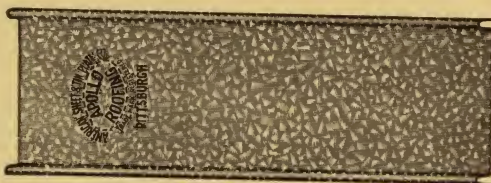


Gauge	Size	Wt. per Sq.	Sq. Ft. per Sht.
26	24 x 96	100	16
	24 x 120	100	20
28	24 x 96	86	16
	24 x 120	86	20

WOOD STRIPS (Triangular)

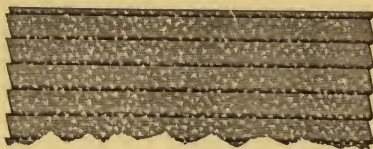
7/8" (Random Lengths) For use with 3 V Crimped Roofing.

GALVANIZED PRESSED STANDING SEAM



Gauge	Size	Wt. per Sq.	Sq. Ft. per Sht.
28	24" x 120"	86 lbs.	20

GALVANIZED WEATHERBOARD OR CLAPBOARD SIDING



Gauge	Size	Wt. per Sq.	Sq. Ft. per Sht.
28	24" x 96"	88 lbs.	16
	24" x 120"	88 lbs.	20

GALVANIZED BRICK SIDING



Gauge
28

Size
28" x 60"

Wgt.
per Sq.
78 lbs.

Sq. Ft.
per Sht.
11 $\frac{2}{3}$

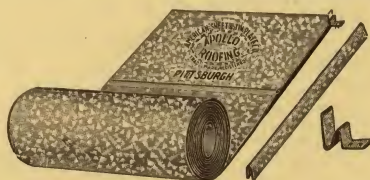
GALVANIZED PLAIN OR SELF CAPPING ROLL ROOFING



Double Cross Lock

No. **28** Gauge, 26 $\frac{1}{2}$ " wide, 50 ft. long. Cover 100 Square Feet.
Rolls weigh 88 lbs.

GALVANIZED ROLL AND CAP ROOFING



Same as Self-Capping Roll Roofing with the addition of Caps and Cleats.

WEIGHTS OF ROOFING MATERIALS

Table showing approximate weights per square foot of various materials used for roofing.

MATERIAL	Av. Wt. —lb. per sq. ft.
Corrugated Galvanized Sheet Steel	
No. 18 U.S.S. Gauge	2.32
No. 20	1.78
No. 22	1.51
No. 24	1.25
No. 26 .....	.98
No. 28 .....	.84
Copper, 16 oz.	1
Felt, 2 layers	$\frac{1}{2}$
Felt and Asphalt or Coal Tar	2
Glass, $\frac{1}{8}$ " thick	$1\frac{3}{4}$
Hemlock sheathing, 1" thick	$2\frac{1}{2}$
Lath and plaster ceiling (ordinary)	6 to 8
Lead $\frac{1}{8}$ " thick	$7\frac{1}{2}$
Shingles, 6 x 18— $\frac{1}{3}$ to weather	2
Skylight of glass, $\frac{3}{16}$ to $\frac{1}{2}$ ", including frame ...	4 to 10
Slag roof, 4-ply, with cement and sand	4
Slate, $\frac{1}{8}$ " thick, 3" double lap	$4\frac{1}{2}$
Slate, $\frac{3}{16}$ " thick, 3" double lap	$6\frac{3}{4}$
Spruce sheathing, 1" thick	$2\frac{1}{4}$
Terne plate, IC	$\frac{5}{8}$
Terne plate, IX.	$\frac{3}{4}$
Tiles (plain) $10\frac{1}{2}$ x $6\frac{1}{4}$ x $\frac{5}{8}$ — $5\frac{1}{4}$ " to weather ..	18
Tiles (Spanish) $14\frac{1}{2}$ x $10\frac{1}{2}$ — $7\frac{1}{4}$ " to weather ..	$8\frac{1}{2}$
White pine sheathing, 1" thick	$2\frac{1}{4}$
Yellow pine sheathing, 1" thick	$3\frac{1}{2}$
Zinc, No. 9 Zinc Gauge	$\frac{2}{3}$

TIN PLATE BASE WEIGHT GAUGE EQUIVALENTS

Basis Weight			Weight Pounds per Sq. Ft.	Approximate Decimal Thickness	Nearest Numbered U.S.S. Gauge
55			.2526	.006315	38
60			.2756	.00689	36
65			.2939	.00734	
70			.3210	.008025	35
75			.34456	.008614	34
80			.3675	.0091875	33
85			.39044	.009761	32
90			.4134	.010335	
95			.4364	.0109095	31
100	ICL		.45475	.01136875	
107	IC		.4915	.0122875	30
128	IXL		.5870	.014675	29
135	IX		.6212	.01553	28
138	6	DC	.637	.015925	
155	IXX		.7111	.0177775	27
175	IXXX		.8085	.020125	26
180		DX	.826	.02065	
195	IXXXX		.896	.0224	25
209		D2X	.962	.02405	
215	5X		.9887	.0247175	24
235	6X		1.08	.027	23
239		D3X	1.10	.0275	
255	7X		1.125	.028125	23
268		D4X	1.23	.03075	
275	8X		1.263	.031575	22
295	9X		1.355	.033875	21
296		D5X	1.36	.034	
315	10X		1.447	.036175	20
324		D6X	1.49	.03725	
335	11X		1.539	.038475	20
355	12X		1.631	.040775	19
375	13X		1.7225	.0430625	19
395	14X		1.814	.04535	19
415	15X		1.906	.04765	18
435	16X		1.998	.04995	18
455	17X		2.009	.050225	18
475	18X		2.182	.05455	17
495	19X		2.274	.05685	17
515	20X		2.37	.05925	16
535	21X		2.45	.06125	16
555	22X		2.55	.06375	16
575	23X		2.64	.066	16

STANDING SEAM TIN ROOFING

Table showing number of 20" x 28" plates required to cover various areas in square feet with standing seam tin roofing. Standing side seams, $\frac{3}{4}$ " to $\frac{7}{8}$ " high, locked $\frac{3}{8}$ " to $\frac{1}{2}$ ", take $2\frac{3}{4}$ " from width, and flat end seams take $1\frac{1}{2}$ " from length, leaving covering area of $457\frac{1}{8}$ square inches. In the table a fractional part of a sheet is counted as a full sheet.

No. of Sq. Ft.	Sheets Required	No. of Sq. Ft.	Sheets Required	No. of Sq. Ft.	Sheets Required	No. of Sq. Ft.	Sheets Required
100	32	330	104	560	177	780	246
110	35	340	108	570	180	790	249
120	38	350	111	580	183	800	253
130	41	360	114	590	186	810	256
140	45	370	117	600	190	820	259
150	48	380	120	610	193	830	262
160	51	390	123	620	196	840	265
170	54	400	127	630	199	850	268
180	57	410	130	640	202	860	271
190	60	420	133	650	205	870	275
200	64	430	136	660	208	880	278
210	67	440	139	670	212	890	281
220	70	450	142	680	215	900	284
230	73	460	145	690	218	910	287
240	76	470	149	700	221	920	290
250	79	480	152	710	224	930	294
260	82	490	155	720	227	940	297
270	86	500	158	730	231	950	300
280	89	510	161	740	234	960	303
290	92	520	164	750	237	970	306
300	95	530	168	760	240	980	309
310	98	540	171	770	243	990	312
320	101	550	174	.....	.....	.....	.....

1,000 square feet, 316 sheets.

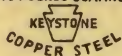
A package of 112 sheets, 20" x 28", covers approximately 356 square feet.



ROOFING TERNES



40 POUNDS COATING



"DOTEN" 40-lb. Coating

A very high grade Roofing Tin evenly coated with a mixture of forty pounds of new tin and lead to a box of 20 x 28.

Palm Oil Process

1C—14 x 20

1C—20 x 28

32 POUNDS COATING
KEYSTONE
COPPER STEEL

"M. F." 32-lb. Coating

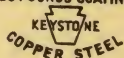
The most popular brand of Roofing Tin on the market. Has been manufactured continuously for over 100 years.

1C—14 x 20

1C—20 x 28

PLYMOUTH

20 POUNDS COATING



"PLYMOUTH" 20-lb. Coating

A fine Roofing Tin for use where the conditions do not require a 32-lb. or 40-lb. sheet.

1C—14 x 20

1C—20 x 28



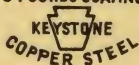
"FIREDOOR" 20-lb. Coating

Manufactured to meet the very rigid requirements of the National Board of Fire Underwriters.

1C—14 x 20

WEATHERPROOF

8 POUNDS COATING



"WEATHERPROOF" 8-lb. Coating

Suitable for temporary buildings or where a Roofing Tin is not expected to last several years.

1C—14 x 20

1C—20 x 28

COKE TINPLATES



20" x 28"	Shts. per Box	FURNACE PIPE SIZES	
80 lbs. Basis IC u/s	112	6"=20" x 20"	128 lbs. IX u/s
95 lbs. Basis IC u/s	112	7"=20" x 23"	128 lbs. IX u/s
100 lbs. Basis IC u/s	112	8"=20" x 26"	128 lbs. IX u/s
107 lbs. Basis IC u/s	112	9"=20" x 29½"	128 lbs. IX u/s
128 lbs. Basis IX u/s	112	10"=20" x 32½"	128 lbs. IX u/s
135 lbs. Basis IX u/s	112	12"=20" x 38½"	128 lbs. IX u/s
155 lbs. Basis IXX u/s	56		
175 lbs. Basis IXXX u/s	56		
195 lbs. Basis IXXXX u/s	56		

CHARCOAL TINPLATES



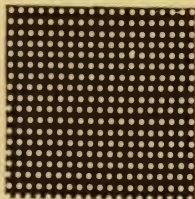
20" x 28"	Shts. per Box	20" x 28"	Shts. per Box
107 lbs. AAA IC	112	195 lbs. AAA IXXXX	56
135 lbs. AAA IX	112	24 Ga. AAA IXXXXX	56
155 lbs. AAA IXX	56	23 Ga. AAA IXXXXXXXX	56
175 lbs. AAA IXXX	56	22 Ga. AAA IXXXXXXXXX	56

"COOKLEY K." CHARCOAL TIN Imported Dairy Tin

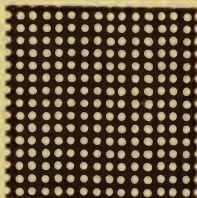
		Approx. Weight per Sheet			Approx. Weight per Sheet
IXXX	30" x 60"	101⅛	IXXXX	40" x 84"	21
IXXXX	30" x 72"	131½	IXXXX	40" x 96"	24
IXXXX	30" x 96"	18	22 U.S.S. Ga.	40" x 96"	33½
IXXXX	36" x 72"	161⅛	20 U.S.S. Ga.	40" x 96"	39⅞
IXXXXXXXX	36" x 72"	191½	18 U.S.S. Ga.	40" x 96"	50¾
IXXXX	36" x 84"	187⅛	IXXXX	44" x 96"	21
IXXXX	36" x 96"	211½	IXXXX	48" x 96"	28¾

PERFORATED TINPLATE

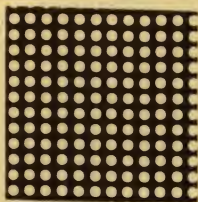
A



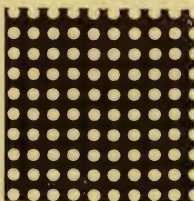
B



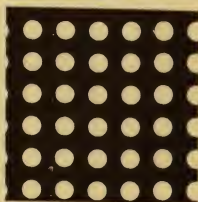
C



D



E



ACTUAL SIZES CARRIED IN STOCK

A	IC	14 x 20	19 Holes to 1"
B	IC	14 x 20	14 Holes to 1"
C	IC	14 x 20	12 Holes to 1"
D	IC	14 x 20	9½ Holes to 1"
E	IX	14 x 20	6 Holes to 1"

Special perforations can be obtained from the mill

TAGGERS TINPLATES

No. 38 Gauge 14 x 20

Used for making tags or on work where a very thin Tinplate is wanted.
Also used for shims.

TABLE OF WEIGHTS OF SHEET COPPER

Birmingham Gauge No.	Stubs or Decimal	WEIGHT PER SQUARE FOOT		Nearest Equivalent Brown & Sharpe's Gauge	
		In Ounces	In Pounds	Decimal	No.
10	.134	97	6.070	.12849	8
11	.120	87	5.436	.11443	9
12	.109	79	4.938	.11443	9
13	.095	69	4.303	.09074	11
14	.083	60	3.760	.08081	12
15	.072	52	3.262	.07196	13
16	.065	47	2.945	.06408	14
17	.058	42	2.627	.05706	15
18	.049	35½	2.220	.05082	16
19	.042	30½	1.90	.04030	18
20	.035	25½	1.59	.03589	19
21	.032	23	1.45	.03196	20
22	.028	20	1.27	.02846	21
23	.025	18	1.13	.025347	22
24	.022	16	.997	.022571	23
25	.020	14½	.906	.0201	24
26	.018	13	.815	.0179	25
27	.016	11½	.725	.01594	26
28	.014	10	.634	.014195	27
29	.013	9½	.589	.01264	28
30	.012	8¾	.544	.011257	29
31	.010	7	.453	.010025	30
32	.009	6½	.408	.008928	31
33	.008	5¾	.362	.00795	32
34	.007	5	.317	.00708	33
35	.005	3⅝	.227	.005	36

These weights are theoretically correct but variations must be expected in practice

SHEET COPPER

COLD ROLLED

COMMON C. R.			CORNICE SIZES		
Untinned		Av. Wt. per Sheet	Cold Rolled Untinned		Av. Wt. per Sheet
12 oz.	14 x 48	3.50	14 oz.	16 x 96	9.34
14 oz.	14 x 48	4.09	14 oz.	18 x 96	10.50
16 oz.	14 x 48	4.67	14 oz.	20 x 96	11.67
18 oz.	14 x 48	5.25	14 oz.	22 x 96	12.84
20 oz.	14 x 48	5.84	14 oz.	24 x 96	14.00
Tinned			14 oz.	26 x 96	15.17
12 oz.	14 x 48	3.50	14 oz.	28 x 96	16.34
14 oz.	14 x 48	4.09	14 oz.	30 x 96	17.50
16 oz.	14 x 48	4.67	14 oz.	36 x 96	21.00
18 oz.	14 x 48	5.25	16 oz.	16 x 96	10.67
14 oz.	24 x 96	14.00	16 oz.	18 x 96	12.00
16 oz.	24 x 96	16.00	16 oz.	20 x 96	13.34
14 oz.	30 x 96	17.50	16 oz.	22 x 96	14.67
16 oz.	30 x 96	20.00	16 oz.	24 x 96	16.00
18 oz.	30 x 96	22.50	16 oz.	26 x 96	17.34
20 oz.	30 x 96	25.00	16 oz.	28 x 96	18.67
22 oz.	30 x 96	27.50	16 oz.	30 x 96	20.00
24 oz.	30 x 96	30.00	16 oz.	36 x 96	24.00
14 oz.	36 x 96	21.00	18 oz.	30 x 96	22.50
16 oz.	36 x 96	24.00	18 oz.	36 x 96	27.00
18 oz.	36 x 96	27.00	20 oz.	30 x 96	25.00
20 oz.	36 x 96	30.00	20 oz.	36 x 96	30.00
22 oz.	36 x 96	33.00	22 oz.	30 x 96	27.50
24 oz.	36 x 96	36.00	22 oz.	36 x 96	33.00
32 oz.	36 x 96	48.00	24 oz.	30 x 96	30.00
Tinned Both Sides			24 oz.	36 x 96	36.00
24 oz.	36 x 96	36.00	32 oz.	36 x 96	48.00
			NICKEL PLATED		
			Tinned One Side		
14 oz.	14 x 48	4.09			

Weights of Sheet Copper are only approximate

SHEET COPPER

SOFT ROLLED FOR LINING TANKS AND ROOFING

Soft Untinned		VALLEY SIZES Soft Untinned		Soft Tinned			
14 oz.	14 x 48	14 oz.	16 x 96	14 oz.	14 x 48		
16 oz.	14 x 48		18 x 96	16 oz.	14 x 48		
18 oz.	14 x 48		20 x 96	20 oz.	14 x 48		
12 oz.	30 x 96		24 x 96	14 oz.	24 x 96		
18 oz.	30 x 96		26 x 96	16 oz.	24 x 96		
20 oz.	30 x 96		28 x 96	14 oz.	30 x 96		
24 oz.	30 x 96		30 x 96		30 x 96		
32 oz.	30 x 96		36 x 96		30 x 96		
40 oz.	30 x 96	16 oz.	16 x 96	16 oz.	30 x 96		
48 oz.	30 x 96			14 oz.	36 x 96		
20 oz.	36 x 96			16 oz.	36 x 96		
24 oz.	36 x 96			18 oz.	36 x 96		
14 oz.	48 x 96			14 oz.	42 x 96		
16 oz.	48 x 96			16 oz.	42 x 96		
16 oz.	60 x 96			14 oz.	48 x 96		
				16 oz.	48 x 96		
				16 oz.	60 x 96		

Weights of Sheets of Soft Copper same as for Cold Rolled.

IN ORDERING PLEASE NOTE THE FOLLOWING

State if you want Tinned or Untinned.

State if you want Soft or Cold Rolled.

SOFT ROLL COPPER

8 oz.	Wt. per Lin. Ft.	10 oz.	Wt. per Lin. Ft.	12 oz.	Wt. per Lin. Ft.	14 oz.	Wt. per Lin. Ft.	16 oz.	Wt. per Lin. Ft.
width		width		width		width		width	
16"	.667	10"	.52	10"	.63	10"	.73	12"	1.00
		12"	.63	12"	.75	12"	.88	14"	1.17
		14"	.73	14"	.88	14"	1.02	16"	1.33
		16"	.83	16"	1.00	16"	1.17	18"	1.50
		18"	.94	18"	1.13	18"	1.31	20"	1.67
		20"	1.04	20"	1.25	20"	1.46		

NICKEL SILVER .

QUARTER HARD 18% NICKEL SILVER SHEETS
POLISHED ONE SIDE

No. 22 B & S Gauge 36 x 96

BRASS PIPE TABLES

SEAMLESS BRASS PIPE

IRON PIPE SIZES

Sizes	American or B. & S. Gauge	Approx. Outside Diameter	Approx. Inside Diameter	Exact Outside Diameter	Exact Inside Diameter	APPROXIMATE WEIGHT IN POUNDS	
						1 Foot	12 Feet
$\frac{1}{8}$ "	14	$\frac{13}{32}$	$\frac{17}{64}$	.405	.281	.25	3.
$\frac{1}{4}$ "	11	$\frac{9}{16}$	$\frac{23}{64}$	.540	.375	.43	5.18
$\frac{3}{8}$ "	11	$\frac{11}{16}$	$\frac{1}{2}$	.675	.494	.62	7.43
$\frac{1}{2}$ "	9 $\frac{1}{2}$	$\frac{13}{16}$	$\frac{5}{8}$	.840	.625	.90	10.81
$\frac{3}{4}$ "	9	$\frac{11}{16}$	$\frac{53}{64}$	1.05	.822	1.25	15.
1"	7 $\frac{1}{2}$	$\frac{15}{16}$	$\frac{13}{64}$	1.315	1.062	1.70	20.
1 $\frac{1}{4}$ "	7	$\frac{15}{8}$	$\frac{13}{8}$	1.600	1.368	2.50	30.
1 $\frac{1}{2}$ "	7	$\frac{17}{8}$	$\frac{139}{64}$	1.900	1.600	3.00	36.
2"	6 $\frac{1}{2}$	$\frac{23}{8}$	$\frac{21}{16}$	2.375	2.062	4.00	48.
2 $\frac{1}{2}$ "	4	$\frac{27}{8}$	$\frac{215}{32}$	2.875	2.500	5.75	69.
3"	$\frac{7}{32}$	$3\frac{1}{2}$	$\frac{31}{16}$	3.500	3.062	8.30	99.62
3 $\frac{1}{2}$ "	$\frac{15}{64}$	4	$3\frac{1}{2}$	4.000	3.500	10.90	130.8
4"	$\frac{1}{4}$	4 $\frac{1}{2}$	$\frac{41}{32}$	4.500	4.000	12.70	152.4
4 $\frac{1}{2}$ "	$\frac{1}{4}$	5	$4\frac{1}{2}$	5.000	4.500	13.90	166.8

PLUMBERS' TUBING

Sizes	American or B. & S. Gauge	Approx. Outside Diameter	Approx. Inside Diameter	Exact Outside Diameter	Exact Inside Diameter	APPROXIMATE WEIGHT IN POUNDS	
						1 Foot	12 Feet
$\frac{5}{8}$ "	14	$\frac{21}{32}$	$\frac{33}{64}$	.654	.521	.46	5.52
$\frac{3}{4}$ "	13 $\frac{1}{2}$	$\frac{49}{64}$	$\frac{5}{8}$	.768	.631	.56	6.72
$\frac{7}{8}$ "	12 $\frac{1}{2}$	$\frac{7}{8}$	$\frac{47}{64}$	.875	.728	.67	8.04
1"	12	1	$\frac{53}{64}$	1.000	.836	.88	10.56
1 $\frac{1}{4}$ "	11	1 $\frac{1}{4}$	$\frac{11}{16}$	1.245	1.060	1.27	15.24
1 $\frac{1}{2}$ "	10	1 $\frac{1}{2}$	$\frac{13}{16}$	1.508	1.311	1.55	18.60

BRASS *ROME Quality* PIPE

IRON PIPE SIZES								
1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
NICKEL PLATED								
3/8", 1/2"								

BRASS *ROME Quality* TUBING

PLAIN AND NICKEL PLATED
3/4" Plumbers' Size

COPPER *ROME Quality* PIPE

IRON PIPE SIZES						
	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"
Weight per Foot . . . . .	.65	.95	1.31	1.79	2.63	3.15
Weight per Length	7.73	11.24	15.6	21.3	31.3	37.44

COPPER *ROME Quality* TUBING



COILS OF ABOUT 50 FEET

Size	B. & S. Gauge	Weight per Foot
3/16" O. D.	No. 20	.07
1/4" O. D.	No. 20	.09
5/16" O. D.	No. 20	.11
3/8" O. D.	No. 20	.137
1/2" O. D.	No. 20	.1995

SHEET ZINC

TABLE OF WEIGHTS, THICKNESSES AND GAUGES

ZINC GAUGE			AMERICAN OR BROWN & SHARPE		STUBS		UNITED STATES STANDARD	
No.	Lbs. per Sq. Ft.	Thickness in Inches	No.	Approx. Thickness in Inches	No.	Approx. Thickness in Inches	No.	Approx. Thickness in Inches
3	.22	.006	34	.0063	35	.005	38	.0062
...	...	...	33	.0070	34	.007	37	.0068
4	.30	.008	32	.0079	33	.008	36	.0070
...	...	...	31	.0089	...	...	35	.0078
5	.37	.010	...	...	32	.009	34	.0086
...	...	...	30	.0100	31	.010	33	.0093
6	.45	.012	29	.0112	30	.012	32	.0101
7	.52	.014	28	.0126	29	.013	31	.0109
8	.60	.016	27	.0141	28	.014	30	.0125
...	...	...	26	.0159	27	.016	29	.0140
9	.67	.018	25	.0179	26	.018	28	.0156
10	.75	.020	24	.0201	25	.020	27	.0171
11	.90	.024	23	.0225	24	.022	26	.0187
12	1.05	.028	22	.0253	23	.025	25	.0218
13	1.20	.032	21	.0284	22	.028	24	.0250
14	1.35	.036	20	.0319	21	.032	23	.0281
15	1.50	.040	19	.0353	20	.035	22	.0312
16	1.68	.045	18	.0403	...	...	21	.0343
17	1.87	.050	17	.0452	19	.042	20	.0375
18	2.06	.055	16	.0508	18	.049	19	.0437
19	2.25	.060	15	.0570	17	.058	18	.0500
20	2.62	.070	14	.0640	16	.065	17	.0562
21	3.00	.080	13	.0719	15	.072	16	.0625
22	3.37	.090	12	.0808	14	.083	15	.0703
23	3.75	.100	11	.0907	13	.095	14	.0781
24	4.70	.125	10	.1018	12	.109	13	.0937
...	...	...	9	.1144	11	.120	12	.1093
...	...	...	8	.1284	10	.134	11	.1250
...	...	...	7	.1442	9	.148	10	.1406
...	...	...	6	.1620	8	.165	9	.1562
...	...	...	5	.1819	7	.180	8	.1718
...	...	...	4	.2043	6	.203	7	.1875
...	...	...	3	.2294	5	.220	6	.2031
...	...	...	...	...	4	.238	5	.2187
25	9.40	.250	2	.2576	3	.259	4	.2343
...	...	...	...	...	2	.284	3	.2500
...	...	...	1	.2893	1	.300	2	.2656
...	...	...	0	.3249	0	.340	1	.2812
26	14.00	.375	000	.4096	000	.425	0	.3125
27	18.75	.500	...	...	...	...	000	.3750
28	37.50	1.000	...	...	...	...	...	.5000

SHEET ZINC

Zinc Gauge	Size in Stock	Aver. Weight per Sheet	Aver. No. Sheets per Cask	Zinc Gauge	Size in Stock	Aver. Weight per Sheet	Aver. No. Sheets per Cask
4	36 x 84	6.30	95	10	36 x 84	15.75	39
5	36 x 84	7.77	78		36 x 96	18.00	33
6	36 x 84	9.45	64		48 x 84	21.00	28
7	36 x 84	10.92	56		48 x 96	24.00	25
8	36 x 84	12.60	49	11	36 x 84	18.90	33
9	36 x 84	14.07	43		36 x 96	21.60	28
	30 x 84	11.73	52	12	36 x 84	22.05	28
	36 x 84	14.07	43		48 x 96	33.60	18
	36 x 96	16.08	38	13	36 x 84	25.20	25
	48 x 84	18.76	33	14	36 x 84	28.35	21
	48 x 96	21.44	28	15	36 x 84	31.50	19
	52 x 96	23.23	26	16	36 x 84	35.28	17
	60 x 96	26.80	23				

All Sizes Carried in 600-lb. Casks.

No. 7, No. 8—36 x 84, also carried in 300-lb. Casks.

No. 9—36 x 84, also carried in 100-200-300-lb. Casks.

NICKEL ZINC

No. 9—.018" Thick, 36 x 42

No. 9—.018" Thick, 36 x 84

The brilliant nickered side gives a fine finish to exposed interior work.

ZINC BOILER PLATES

ROLLED ZINC

1/2" Thick, 6" x 12"—10 lbs. per plate.

1" Thick, 6" x 12"—20 lbs. per plate.

Weights of Sheet Zinc are only approximate
SPECIAL SIZES FURNISHED FOR SHIPMENT FROM MILL

SOLDER

EXTRA H. L. D. & SONS HALF & HALF SOLDER

Warranted Half Tin and Half Lead

$\frac{1}{2}$ Pound Bars

We also carry in stock

$\frac{3}{4}$ Pound Bars

3 Bars to the Pound

No. 1 REFINED SOLDER

$\frac{3}{4}$ Pound Bars

WIPING SOLDER

5 Pound Ingots

WIRE SOLDER

$\frac{1}{8}$ Inch Diameter

BABBITT METAL

GENUINE BABBITT

ANTI-FRICTION BABBITT

No. 4 BABBITT

SOLDER COPPERS

REGULAR—POINTED



1 lb. per pair
 1½ lbs. per pair
 2 lbs. per pair
 3 lbs. per pair
 4 lbs. per pair

5 lbs. per pair
 6 lbs. per pair
 8 lbs. per pair
 10 lbs. per pair

BOTTOM



4 lbs. per pair
 5 lbs. per pair
 6 lbs. per pair

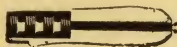
SWIVEL

4 lbs. per pair

SOLDER COPPER HANDLES



"SHUR-GRIP"



Cuts a thread on the stem of the Solder Iron as it's being screwed on.

No. 5	For 1 lb.	Solder Coppers
No. 7	For 1½ lbs. to 4 lbs.	Solder Coppers
No. 8	For 4 lbs. to 8 lbs.	Solder Coppers
No. 9	For 8 lbs. to 12 lbs.	Solder Coppers



"DONOHUE"

No. 2	For up to 3 lbs.	Solder Coppers
No. 4	For 4 lbs. to 6 lbs.	Solder Coppers

SOLDERING FLUXES



BURLEYS SOLDERING PASTE

1/4 Pound, 1/2 Pound Cans

1 Pound, 5 Pound Cans



YAGERS SOLDERING SALTS

1/2 Pound Cans

1 Pound Cans

5 Pound Cans

SOLDERING SOLUTION

Our Special Formula

Put up in

1 Quart, 2 Quart and 1 Gallon Cans

ACID BRUSHES



For applying acid, also very convenient for paste.

SOLDERING FLUXES



SPECO SOLID SAL AMMONIAC

$\frac{1}{2}$ Pound Cakes 2" x 2" x 2"

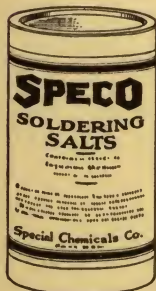
1 Pound Cakes 2" x 2" x 4"



SPECO SOLDERING PASTE

$\frac{1}{4}$ Pound Cans

$\frac{1}{2}$ Pound Cans



SPECO SOLDERING SALTS

$\frac{1}{2}$ Pound Cans

ANGLES

Thickness	Size	Av. Wt. per Foot	Av. Wt. per 22-Foot Length
1/8"	1/2" x 1/2"	.38	8.36
	5/8" x 5/8"	.48	10.56
	3/4" x 3/4"	.59	12.98
	7/8" x 7/8"	.70	15.40
	1" x 1"	.80	17.60
	1 1/4" x 1 1/4"	1.01	22.22
	1 1/2" x 1 1/2"	1.23	27.06
	1 3/4" x 1 3/4"	1.44	31.68
	2" x 2"	1.65	36.30
3/16"	1" x 1"	1.16	25.52
	1 1/4" x 1 1/4"	1.48	32.56
	1 1/2" x 1 1/2"	1.80	39.60
	1 3/4" x 1 3/4"	2.12	46.64
	2" x 2"	2.44	53.68
1/4"	1 1/4" x 1 1/4"	1.92	42.24
	1 1/2" x 1 1/2"	2.34	51.48
	2" x 2"	3.19	70.18
	2 1/2" x 2 1/2"	4.10	90.20
	3" x 3"	4.90	107.80
	2 1/2" x 2"	3.62	79.64
	3" x 2"	4.10	90.20
	3 1/2" x 2 1/2"	4.90	107.80
3/8"	2" x 2"	4.70	103.40
	2 1/2" x 2 1/2"	5.90	129.80
	3" x 3"	7.20	158.40

ROUND SOFT STEEL RODS

Diameter	12 FEET		14 FEET	
	Av. Wt. per Foot	Av. Wt. 12 Feet	Av. Wt. per Foot	Av. Wt. 14 Feet
Black				
3/16"	.09	1.08	.09	1.26
1/4"	.17	2.04	.17	2.38
5/16"	.26	3.12		
3/8"	.38	4.56		
1/2"	.67	8.04		
5/8"	1.04	12.48		
3/4"	1.50	18.00		
Galvanized				
1/4"			.179	2.50

FLAT SOFT STEEL BARS

BLACK

Thickness	Width	Average Weight per Foot	Average Weight per 16-Foot Length
1/8"	3/4"	.32	5.12
	7/8"	.37	5.92
	1"	.43	6.80
	1 1/4"	.53	8.48
	1 1/2"	.64	10.24
	2"	.85	13.60
3/16"	3/4"	.48	7.68
	1"	.64	10.24
	1 1/4"	.80	12.80
	1 1/2"	.96	15.36
	2"	1.28	20.48
1/4"	3/4"	.64	10.24
	1"	.85	13.60
	1 1/4"	1.06	16.96
	1 1/2"	1.28	20.48
	2"	1.70	27.20
3/8"	2"	2.55	40.80

GALVANIZED

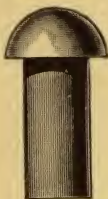
Thickness	Width	Average Weight per Foot	Average Weight per 16-Foot Length
1/8"	3/4"	.336	5.38
	7/8"	.388	6.21
	1"	.452	7.23
	1 1/4"	.556	8.90
	1 1/2"	.672	10.75
	2"	.893	14.28
3/16"	3/4"	.504	8.06
	1"	.672	10.75
	1 1/4"	.840	13.44
	1 1/2"	1.008	16.13
1/4"	1"	.892	14.27
	1 1/4"	1.113	17.81
	1 1/2"	1.344	21.50
	2"	1.785	28.56

GALVANIZED BAND

No. 22 Ga. x 7/8" in coils .0956 lbs. per foot

BUTTON HEAD TANK RIVETS

Diam-eter	Length	Approx. No. Rivets per Pound	Diam-eter	Length	Approx. No. Rivets per Pound
$\frac{1}{8}$ "	$\frac{1}{4}$ "	200	$\frac{5}{16}$ "	$\frac{1}{2}$ "	50
	$\frac{3}{8}$ "	190		$\frac{5}{8}$ "	44
	$\frac{1}{2}$ "	175		$\frac{3}{4}$ "	39
	$\frac{5}{8}$ "	160		$\frac{7}{8}$ "	35
	$\frac{3}{4}$ "	144		1"	32
	$\frac{7}{8}$ "	135		$1\frac{1}{4}$ "	28
	1"	126		$1\frac{1}{2}$ "	24
$\frac{5}{32}$ "	$\frac{1}{4}$ "	195	$\frac{3}{8}$ "	$\frac{1}{2}$ "	31
	$\frac{3}{8}$ "	190		$\frac{5}{8}$ "	27
	$\frac{1}{2}$ "	167		$\frac{3}{4}$ "	24
	$\frac{5}{8}$ "	149		$\frac{7}{8}$ "	22
	$\frac{3}{4}$ "	133		1"	20
$\frac{3}{16}$ "	$\frac{3}{8}$ "	188	$\frac{7}{16}$ "	$1\frac{1}{8}$ "	19
	$\frac{1}{2}$ "	159		$1\frac{1}{4}$ "	18
	$\frac{5}{8}$ "	138		$1\frac{1}{2}$ "	16
	$\frac{3}{4}$ "	122		$1\frac{3}{4}$ "	14
	$\frac{7}{8}$ "	109		$\frac{3}{4}$ "	17
	1"	98		1"	14
$\frac{1}{4}$ "	$\frac{3}{8}$ "	103		$1\frac{1}{4}$ "	12
	$\frac{1}{2}$ "	81		$1\frac{1}{2}$ "	11
	$\frac{5}{8}$ "	71		$1\frac{3}{4}$ "	10
	$\frac{3}{4}$ "	63		2"	9
	$\frac{7}{8}$ "	56			
	1"	50			



BUTTON HEAD STRUCTURAL RIVETS

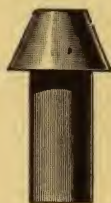


LENGTH MEASUREMENT—UNDER THE HEAD

Diam-eter	Length	Approx. No. Rivets per 100 lbs.	Diam-eter	Length	Approx. No. Rivets per 100 lbs.
$\frac{1}{2}$ "	$\frac{3}{4}$ "	1103	$\frac{3}{4}$ "	$3\frac{1}{2}$ "	177
	1"	968		4"	161
	$1\frac{1}{8}$ "	910		$4\frac{1}{2}$ "	149
	$1\frac{1}{4}$ "	862		5"	136
	$1\frac{3}{8}$ "	815	$\frac{7}{8}$ "	2"	178
	$1\frac{1}{2}$ "	776		$2\frac{1}{4}$ "	167
	$1\frac{5}{8}$ "	740		$2\frac{3}{8}$ "	162
	$1\frac{3}{4}$ "	707		$2\frac{1}{2}$ "	157
	2"	648		$2\frac{5}{8}$ "	152
	$2\frac{1}{2}$ "	556		$2\frac{3}{4}$ "	148
	$2\frac{3}{4}$ "	519		3"	140
	3"	487		$3\frac{1}{8}$ "	136
	$4\frac{1}{2}$ "	334		$3\frac{1}{4}$ "	132
$\frac{5}{8}$ "	1"	571		$3\frac{1}{2}$ "	126
	$1\frac{1}{4}$ "	514		$3\frac{3}{4}$ "	120
	$1\frac{1}{2}$ "	462		4"	115
	$1\frac{3}{4}$ "	428		$4\frac{1}{4}$ "	110
	2"	395		$4\frac{1}{2}$ "	105
	$2\frac{1}{4}$ "	367		$4\frac{3}{4}$ "	101
	$2\frac{1}{2}$ "	343		5"	97
	$2\frac{3}{4}$ "	321		$5\frac{1}{4}$ "	94
	3"	302		$5\frac{1}{2}$ "	91
	$3\frac{1}{4}$ "	285		6"	85
	$3\frac{1}{2}$ "	270	1"	$2\frac{1}{2}$ "	104
$\frac{3}{4}$ "	$1\frac{1}{2}$ "	284		3"	88
	$1\frac{3}{4}$ "	266		$3\frac{1}{2}$ "	82
	$1\frac{7}{8}$ "	257		4"	77
	2"	249		$4\frac{1}{2}$ "	73
	$2\frac{1}{8}$ "	240		5"	69
	$2\frac{1}{4}$ "	233		6"	61
	$2\frac{3}{8}$ "	226		7"	53
	$2\frac{1}{2}$ "	219	$1\frac{1}{8}$ "	$3\frac{1}{2}$ "	70
	$2\frac{5}{8}$ "	212		4"	60
	$2\frac{3}{4}$ "	206		5"	52
	3"	196			
	$3\frac{1}{4}$ "	186			



CONE HEAD BOILER RIVETS



LENGTH MEASUREMENT—UNDER THE HEAD

Diam-eter	Length	Approx. No. Rivets per 100 lbs.	Diam-eter	Length	Approx. No. Rivets per 100 lbs.
$\frac{1}{2}$ "	$\frac{3}{4}$ "	1103	$\frac{3}{4}$ "	$1\frac{1}{4}$ "	311
	$\frac{7}{8}$ "	1030		$1\frac{3}{8}$ "	295
	1"	968		$1\frac{1}{2}$ "	284
	$1\frac{1}{8}$ "	910		$1\frac{5}{8}$ "	275
	$1\frac{1}{4}$ "	862		$1\frac{3}{4}$ "	266
	$1\frac{3}{8}$ "	815		$1\frac{7}{8}$ "	257
	$1\frac{1}{2}$ "	776		2"	249
	$1\frac{5}{8}$ "	740		$2\frac{1}{8}$ "	240
	$1\frac{3}{4}$ "	707		$2\frac{1}{4}$ "	233
	2"	648		$2\frac{3}{8}$ "	226
	$2\frac{1}{4}$ "	599		$2\frac{1}{2}$ "	219
	$2\frac{1}{2}$ "	556		$2\frac{5}{8}$ "	212
	3"	487		$2\frac{3}{4}$ "	206
$\frac{5}{8}$ "	1"	571		3"	196
	$1\frac{1}{8}$ "	541		$3\frac{1}{2}$ "	177
	$1\frac{1}{4}$ "	514		4"	161
	$1\frac{3}{8}$ "	489		$4\frac{1}{2}$ "	149
	$1\frac{1}{2}$ "	462		5"	136
	$1\frac{5}{8}$ "	446		$5\frac{1}{2}$ "	127
	$1\frac{3}{4}$ "	428		6"	118
	$1\frac{7}{8}$ "	411		$6\frac{1}{2}$ "	110
	2"	395		$8\frac{1}{2}$ "	85
	$2\frac{1}{4}$ "	367	$\frac{7}{8}$ "	$1\frac{1}{2}$ "	201
	$2\frac{1}{2}$ "	343		$1\frac{5}{8}$ "	199
	$2\frac{3}{4}$ "	321		$1\frac{3}{4}$ "	192
	3"	302		$1\frac{7}{8}$ "	185
	$3\frac{1}{2}$ "	270		2"	178
	4"	244		$2\frac{1}{8}$ "	172
	$4\frac{1}{2}$ "	223		$2\frac{1}{4}$ "	167
	5"	205		$2\frac{3}{8}$ "	162
	$5\frac{1}{2}$ "	190		$2\frac{1}{2}$ "	157
	6"	177		$2\frac{5}{8}$ "	152
				$2\frac{3}{4}$ "	148



CONE HEAD BOILER RIVETS

Continued

Diam-eter	Length	Approx. No. Rivets per 100 lbs.	Diam-eter	Length	Approx. No. Rivets per 100 lbs.
$\frac{7}{8}$ "	3"	140	1"	2"	120
	$3\frac{1}{4}$ "	132		$2\frac{1}{2}$ "	104
	$3\frac{1}{2}$ "	126		3"	88
	$3\frac{3}{4}$ "	120		$3\frac{1}{4}$ "	85
	4"	115		$3\frac{1}{2}$ "	82
	$4\frac{1}{2}$ "	105		4"	77
	5"	97		$4\frac{1}{2}$ "	73
	$5\frac{1}{2}$ "	91		5"	69
	6"	85		6"	61
	$6\frac{1}{2}$ "	79	$1\frac{1}{8}$ "	$3\frac{1}{2}$ "	70
	7"	75		4"	60
	$7\frac{1}{2}$ "	71			
	8"	67			

SIZE OF RIVET HEADS

Diameter of Rivet	BUTTON HEAD		CONE HEAD	
	Diameter of Head	Height of Head	Diameter of Head	Height of Head
$\frac{1}{4}$ "	$\frac{7}{16}$ "	$\frac{3}{16}$ "	$\frac{7}{16}$ "	$\frac{7}{32}$ "
$\frac{5}{16}$ "	$\frac{9}{16}$ "	$\frac{1}{4}$ "	$\frac{9}{16}$ "	$\frac{9}{32}$ "
$\frac{3}{8}$ "	$\frac{21}{32}$ "	$\frac{9}{32}$ "	$\frac{21}{32}$ "	$\frac{11}{32}$ "
$\frac{7}{16}$ "	$\frac{25}{32}$ "	$\frac{11}{32}$ "	$\frac{25}{32}$ "	$\frac{13}{32}$ "
$\frac{1}{2}$ "	$\frac{7}{8}$ "	$\frac{3}{8}$ "	$\frac{7}{8}$ "	$\frac{7}{16}$ "
$\frac{9}{16}$ "	1"	$\frac{7}{16}$ "	1"	$\frac{1}{2}$ "
$\frac{5}{8}$ "	$\frac{13}{32}$ "	$\frac{15}{32}$ "	$\frac{13}{32}$ "	$\frac{9}{16}$ "
$\frac{11}{16}$ "	$\frac{17}{32}$ "	$\frac{17}{32}$ "	$\frac{17}{32}$ "	$\frac{5}{8}$ "
$\frac{3}{4}$ "	$\frac{15}{16}$ "	$\frac{9}{16}$ "	$\frac{15}{16}$ "	$\frac{21}{32}$ "
$\frac{13}{16}$ "	$\frac{17}{16}$ "	$\frac{5}{8}$ "	$\frac{17}{16}$ "	$\frac{23}{32}$ "
$\frac{7}{8}$ "	$\frac{117}{32}$ "	$\frac{21}{32}$ "	$\frac{117}{32}$ "	$\frac{25}{32}$ "
$\frac{15}{16}$ "	$\frac{121}{32}$ "	$\frac{23}{32}$ "	$\frac{121}{32}$ "	$\frac{27}{32}$ "
1"	$\frac{13}{4}$ "	$\frac{3}{4}$ "	$\frac{13}{4}$ "	$\frac{7}{8}$ "
$\frac{11}{16}$ "	$\frac{17}{8}$ "	$\frac{13}{16}$ "	$\frac{17}{8}$ "	$\frac{15}{16}$ "
$\frac{11}{8}$ "	$\frac{131}{32}$ "	$\frac{27}{32}$ "	$\frac{131}{32}$ "	1"
$\frac{13}{16}$ "	$\frac{23}{32}$ "	$\frac{29}{32}$ "	$\frac{23}{32}$ "	$\frac{11}{32}$ "
$\frac{11}{4}$ "	$\frac{23}{16}$ "	$\frac{15}{16}$ "	$\frac{23}{16}$ "	$\frac{13}{32}$ "



COUNTERSUNK HEAD BOILER RIVETS



LENGTH MEASUREMENT—OVER ALL

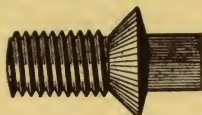
Diam-eter	Length	Approx. No. Rivets per 100 lbs.	Diam-eter	Length	Approx. No. Rivets per 100 lbs.
$\frac{1}{2}$ "	$1\frac{1}{4}$ "	1190	$\frac{3}{4}$ "	$1\frac{1}{2}$ "	411
	$1\frac{1}{2}$ "	1094		$1\frac{3}{4}$ "	380
	$1\frac{3}{4}$ "	952		2"	332
	2"	843		$2\frac{1}{4}$ "	300
	$2\frac{1}{2}$ "	686		$2\frac{1}{2}$ "	276
	3"	577		$2\frac{3}{4}$ "	254
	$3\frac{1}{2}$ "	498		3"	233
$\frac{5}{8}$ "	$1\frac{1}{4}$ "	690	$\frac{7}{8}$ "	$1\frac{3}{4}$ "	285
	$1\frac{1}{2}$ "	645		2"	243
	$1\frac{3}{4}$ "	561		$2\frac{1}{2}$ "	201
	2"	500		3"	174
	$2\frac{1}{4}$ "	451		$3\frac{1}{2}$ "	152
	$2\frac{1}{2}$ "	412		4"	135
	3"	349			

SIZE OF RIVET HEADS

Diameter of Rivet	Diameter of Head	Diameter of Rivet	Diameter of Head
$\frac{1}{4}$ "	$\frac{1}{2}$ "	$\frac{13}{16}$ "	$1\frac{11}{32}$ "
$\frac{5}{16}$ "	$\frac{19}{32}$ "	$\frac{7}{8}$ "	$1\frac{17}{16}$ "
$\frac{3}{8}$ "	$\frac{11}{16}$ "	$\frac{15}{16}$ "	$1\frac{17}{32}$ "
$\frac{7}{16}$ "	$\frac{25}{32}$ "	1"	$1\frac{5}{8}$ "
$\frac{1}{2}$ "	$\frac{7}{8}$ "	$\frac{11}{16}$ "	$1\frac{23}{32}$ "
$\frac{9}{16}$ "	$\frac{31}{32}$ "	$\frac{11}{8}$ "	$1\frac{13}{16}$ "
$\frac{5}{8}$ "	$\frac{11}{16}$ "	$\frac{13}{16}$ "	$1\frac{29}{32}$ "
$\frac{11}{16}$ "	$\frac{15}{32}$ "	$\frac{11}{4}$ "	2"
$\frac{3}{4}$ "	$1\frac{1}{4}$ "		

ANGLE OF COUNTERSUNK 35°

BOILER PATCH BOLTS



Threaded 12 Threads to the Inch

Size	Approx. No. Bolts in 100 Lbs.	Size	Approx. No. Bolts in 100 Lbs.
$\frac{1}{2}'' \times 1''$	1125	$\frac{7}{8}'' \times 1''$	270
$\frac{1}{2}'' \times 1\frac{3}{8}''$	940	$\frac{7}{8}'' \times 1\frac{3}{8}''$	240
$\frac{5}{8}'' \times 1''$	640	$1'' \times 1\frac{3}{8}''$	190
$\frac{5}{8}'' \times 1\frac{3}{8}''$	545	$1'' \times 1\frac{3}{4}''$	165
$\frac{3}{4}'' \times 1''$	420		
$\frac{3}{4}'' \times 1\frac{3}{8}''$	375		

BOILER STAY BOLTS

SOLID—STEEL

Threaded 12 Threads to the Inch

Size	LENGTHS
$\frac{7}{8}''$ diameter	24'' long
1'' diameter	24'' long
$1\frac{1}{8}''$ diameter	24'' long
$1\frac{1}{4}''$ diameter	24'' long

HOLLOW—CHARCOAL IRON

Threaded 12 Threads to the Inch

Size	LENGTHS	
$\frac{7}{8}''$ diameter	24'' long	36'' long
1'' diameter	24'' long	36'' long
$1\frac{1}{8}''$ diameter	24'' long	36'' long
$1\frac{1}{4}''$ diameter	24'' long	36'' long

STOVE BOLTS

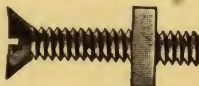
ROUND HEAD



In packages of 100 Bolts

Diameter	Lengths
$\frac{3}{16}$ "	$\frac{3}{8}$ "- $\frac{1}{2}$ "- $\frac{5}{8}$ "- $\frac{3}{4}$ "- $\frac{7}{8}$ "-1"-1 $\frac{1}{4}$ "-1 $\frac{1}{2}$ "-1 $\frac{3}{4}$ "-2"-2 $\frac{1}{2}$ "
$\frac{1}{4}$ "	$\frac{3}{8}$ "- $\frac{1}{2}$ "- $\frac{5}{8}$ "- $\frac{3}{4}$ "- $\frac{7}{8}$ "-1"-1 $\frac{1}{4}$ "-1 $\frac{1}{2}$ "-1 $\frac{3}{4}$ "-2"-2 $\frac{1}{4}$ "-2 $\frac{1}{2}$ "-3"
$\frac{5}{32}$ "	$\frac{3}{8}$ "- $\frac{1}{2}$ "- $\frac{5}{8}$ "- $\frac{3}{4}$ "- $\frac{7}{8}$ "-1"-1 $\frac{1}{4}$ "
$\frac{7}{32}$ "	$\frac{3}{4}$ "
$\frac{5}{16}$ "	$\frac{5}{8}$ "-1"

FLAT HEAD



In packages of 100 Bolts

Diameter	Lengths
$\frac{3}{16}$ "	$\frac{3}{8}$ "- $\frac{1}{2}$ "- $\frac{5}{8}$ "- $\frac{3}{4}$ "- $\frac{7}{8}$ "-1"-1 $\frac{1}{4}$ "-1 $\frac{1}{2}$ "-1 $\frac{3}{4}$ "-2"-2 $\frac{1}{2}$ "
$\frac{1}{4}$ "	$\frac{3}{8}$ "- $\frac{1}{2}$ "- $\frac{5}{8}$ "- $\frac{3}{4}$ "- $\frac{7}{8}$ "-1"-1 $\frac{1}{4}$ "-1 $\frac{1}{2}$ "-1 $\frac{3}{4}$ "-2"-2 $\frac{1}{4}$ "-2 $\frac{1}{2}$ "-3"
$\frac{5}{32}$ "	$\frac{3}{8}$ "- $\frac{1}{2}$ "- $\frac{5}{8}$ "- $\frac{3}{4}$ "- $\frac{7}{8}$ "-1"-1 $\frac{1}{4}$ "
$\frac{5}{16}$ "	1"

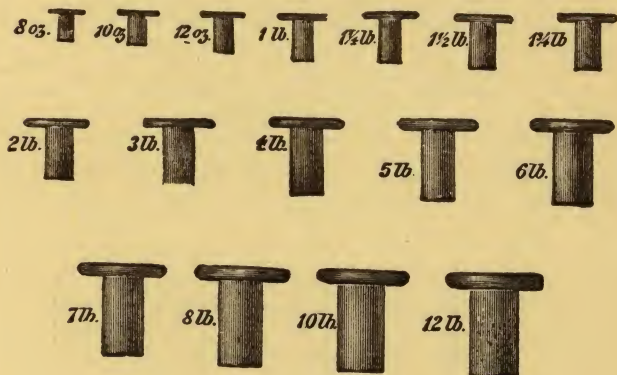
SINK BOLTS

FLAT HEAD

Diameter	Lengths
$\frac{1}{4}$ "	2"-2 $\frac{1}{2}$ "-3"

Sink Bolts furnished with two nuts on each Bolt

TINSMITH RIVETS



BLACK AND TINNED RIVETS

In packages of 1000 Rivets

8 oz.-10 oz.-12 oz.-14 oz.-1 lb.-1 1/2 lb.-1 3/4 lb.

2 lb.-2 1/2 lb.-3 lb.-3 1/2 lb.-4 lb.-5 lb.-6 lb.

7 lb.-8 lb.-9 lb.-10 lb.-12 lb.

COPPER RIVETS

1 lb.-1 1/4 lb.-1 1/2 lb.-1 3/4 lb.-2 lb.

2 1/2 lb.-3 lb.-4 lb.-5 lb.-6 lb.-7 lb.-8 lb.

TINNED BURRS

No. 3 For 12 lb. Rivet

No. 5 For 8 lb. Rivet

No. 6 For 6 lb. Rivet

No. 7 For 4 lb. Rivet

No. 8 For 3 lb. Rivet

No. 9 For 2 lb. Rivet

1/4" For 1/4" Rivet

No. 10 For 1 lb. Rivet

No. 12 For 12 oz. Rivet

See page 46 for dimensions of Tinsmith Rivets.

TINSMITH RIVET TABLE

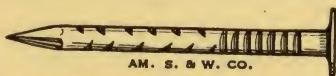
SHOWING LENGTHS AND SIZES FLAT HEADS

COMPILED BY HARRY L. DOTEN & SONS
BOSTON, MASS.

Size = Weight of 1000 Rivets	Length	DIAMETER OF WIRE		
		Nearest Gauge	Decimal	Nearest Fraction
8 oz.	$\frac{5}{32}$ "	$13\frac{1}{4}$	.0900	$\frac{3}{32}$ "
10 oz.	$\frac{11}{64}$ "	13	.09375	$\frac{3}{32}$ "
12 oz.	$\frac{3}{16}$ "	$12\frac{1}{4}$	.10547	$\frac{7}{64}$ "
14 oz.	$\frac{3}{16}$ "	12	.109375	$\frac{7}{64}$ "
1 lb.	$\frac{13}{64}$ "	$11\frac{3}{4}$	.113275	$\frac{7}{64}$ "
$1\frac{1}{4}$ lb.	$\frac{7}{32}$ "	11	.125	$\frac{1}{8}$ "
$1\frac{1}{2}$ lb.	$\frac{15}{64}$ "	$10\frac{1}{4}$	.136725	$\frac{9}{64}$ "
$1\frac{3}{4}$ lb.	$\frac{1}{4}$ "	10	.140625	$\frac{9}{64}$ "
2 lb.	$\frac{17}{64}$ "	$9\frac{1}{4}$	.15235	$\frac{5}{32}$ "
$2\frac{1}{2}$ lb.	$\frac{9}{32}$ "	9	.15625	$\frac{5}{32}$ "
3 lb.	$\frac{5}{16}$ "	$8\frac{1}{4}$	.167975	$\frac{11}{64}$ "
$3\frac{1}{2}$ lb.	$\frac{21}{64}$ "	8	.171875	$\frac{11}{64}$ "
4 lb.	$\frac{11}{32}$ "	$7\frac{1}{4}$	.1836	$\frac{3}{16}$ "
5 lb.	$\frac{3}{8}$ "	$6\frac{3}{4}$	.1915	$\frac{3}{16}$ "
6 lb.	$\frac{25}{64}$ "	6	.203125	$\frac{13}{64}$ "
7 lb.	$\frac{13}{32}$ "	$5\frac{1}{4}$	.21485	$\frac{7}{32}$ "
8 lb.	$\frac{7}{16}$ "	$4\frac{3}{4}$	.22265	$\frac{7}{32}$ "
9 lb.	$\frac{29}{64}$ "	$4\frac{1}{4}$	.230475	$\frac{15}{64}$ "
10 lb.	$\frac{15}{32}$ "	4	.234375	$\frac{15}{64}$ "
12 lb.	$\frac{1}{2}$ "	3	.25	$\frac{1}{4}$ "
14 lb.	$\frac{33}{64}$ "	2	.265625	$\frac{17}{64}$ "
16 lb.	$\frac{17}{32}$ "	1	.28125	$\frac{9}{32}$ "

For sizes carried in stock see Page 45

NAILS



AM. S. & W. CO.

BARBED ROOFING NAILS BLACK AND TINNED

Size	Gauge	No. to 1 Pound
$\frac{3}{4}$ "	13	714
$\frac{7}{8}$ "	12	469
1"	12	411

GALVANIZED BARBED ROOFING NAILS

Size	Gauge	No. to 1 Pound
1"	12	411
$1\frac{1}{4}$ "	11	251
$1\frac{1}{2}$ "	10	176

COPPER BARBED ROOFING NAILS

Size	Gauge	No. to 1 Pound
$\frac{3}{4}$ "	13	1013
$\frac{7}{8}$ "	13	889
1"	12	765

HARDENED MASONRY NAILS

Electro-Galvanized Finish

$\frac{3}{16}$ " x 1"

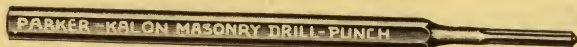
$\frac{1}{4}$ " x $1\frac{1}{2}$ "

$\frac{1}{4}$ " x 2"

Packed in boxes of 100



MASONRY DRILL PUNCH



$\frac{3}{16}$ " $1\frac{1}{4}$ "

For use with Masonry Nails where the concrete is very hard

SHEET METAL SCREWS

PARKER HARDENED SHEET METAL SCREWS



Cut their own threads, and replace the use of stove bolts, tap bolts, rivets and other costly operations in joining and making fastenings to sheet metal.



Round Head only carried in stock

No. 6	$\frac{3}{8}$ " x $\frac{3}{32}$ "
No. 7	$\frac{1}{2}$ " x $\frac{1}{8}$ "
No. 10	$\frac{3}{4}$ " x $\frac{3}{16}$ "
No. 14	$\frac{7}{8}$ " x $\frac{1}{4}$ "

Flat Head Sheet Metal Screws can be obtained promptly from the manufacturer.

PARKER PUNCHES

Made of High Grade Tool Steel
STOP PUNCH



With this Stop Punch you can make the size of the hole for the size screw you intend using. Made in three sizes for $\frac{1}{8}$ ", $\frac{3}{16}$ " and $\frac{1}{4}$ " screws.

PLAIN PUNCH



With this Plain Punch you can punch a hole for any size of screw.

HOW TO USE PARKER HARDENED SHEET METAL SCREWS



First punch a hole though the sheets of metal to be joined, making the hole a little smaller than the outside diameter of the screw. The hole can be punched with an ordinary prick punch, but we recommend the use of the **Parker Stop Punch**, which not only punches the exact size of hole necessary, but also slightly upsets the metal.

After punching the hole, use a screw-driver to draw the screw right up it its head, as shown. The tighter the screw is drawn up, the stronger the fastening is made.

WIRE TABLE

A. S. & W. Co. Steel Wire Gauge	Fraction	Decimal	Pounds per Foot	Feet per Pound	Approx. No. Feet per 63-lb. Bdle.
1		.2830	.2136	4.681	294.453
	$\frac{9}{32}$	.28125	.2110		
2		.2625	.1838	5.441	342.783
	$\frac{1}{4}$	.250	.1667		
3		.2437	.1584	6.313	397.719
4		.2253	.1354	7.386	465.318
	$\frac{7}{32}$	.21875	.1276		
5		.2070	.1143	8.750	551.250
6		.1920	.0983	10.17	640.71
	$\frac{3}{16}$	.1875	.0937		
7		.1770	.0835	11.97	754.11
8		.1620	.0700	14.29	900.27
	$\frac{5}{32}$	.15625	.0651		
9		.1483	.0586	17.05	1074.15
10		.1350	.0486	20.57	1295.91
	$\frac{1}{8}$	.1250	.0416		
11		.1205	.0387	25.82	1626.66
12		.1055	.0296	33.69	2122.47
	$\frac{3}{32}$	.09375	.0234		
13		.0915	.0223	44.78	2821.14
14		.0800	.0170	58.58	3690.54
15		.0720	.0138	72.32	4556.16
16		.0625	.0104	95.98	6046.74
17	$\frac{1}{16}$	.0540	.0077	128.6	
18		.0475	.0060	166.2	
19		.0410	.0044	223.0	
20		.0348	.0032	309.6	
21		.0317	.002680	373.1	
22		.0286	.002182	458.4	
23		.0258	.001775	563.3	
24		.0230	.001411	708.7	
25		.0204	.001110	900.9	
26		.0181	.0008738	1144.	
27		.0173	.0007983	1253.	
28		.0163	.0007000	1429.	
29		.0150	.0006001	1666.	
30		.0140	.0005228	1913.	
31		.0132	.0004647	2152.	
32		.0128	.0004370	2288.	
33		.0118	.0003714	2693.	
34		.0104	.0002885	3466.	
35		.0095	.0002407	4154.	
36		.0090	.0002160	4629.	

WIRE



"C" MARKET WIRE

63 Pound Bundles

Bright	Nos. 3-4-5-6-7-8-9-10-11-12-13-14-15-16
Annealed	Nos. 3-4-5-6-7-8-9-10-11-12-13-14-15
Coppered	Nos. 3-4-5-6-7-8-9-10-11-12-13-14-15-16
Galvanized	Nos. 3-4-5-6-7-8-9-10-11-12-13-14-15
Tinned	Nos. 3-4-5-6-7-8-9-10-11-12-13-14-15-16

PURE COPPER WIRE

5 Pound Spools

Nos. 10-11-12-13-14-15

Nos. 16-17-18-19-20-22

WIRE IN STONES



12 Pounds Each

Annealed	Nos. 16-17-18-19-20-21-22-23-24
Galvanized	Nos. 16-17-18-19-20

No. 18 Annealed and Galvanized Wire is commonly known as "Stove Pipe Wire."

VENTILATORS

"GLOBE"

VENTILATORS



GALVANIZED STEEL

Size	Sizes in Stock	Gauge of Iron	Outside Diameter Inches	Total Height Inches	Net Weight Pounds	List Price
3"	x	26	6 $\frac{3}{4}$	5 $\frac{3}{4}$	1	\$1.50
3 $\frac{1}{2}$ "		26	7	6	1	1.50
4"	x	26	7 $\frac{3}{4}$	6 $\frac{1}{2}$	1 $\frac{1}{4}$	1.75
4 $\frac{1}{2}$ "		26	8	7	1 $\frac{3}{4}$	2.00
5"	x	26	10	7 $\frac{1}{2}$	2 $\frac{1}{4}$	2.50
5 $\frac{1}{2}$ "		26	10 $\frac{1}{2}$	8	2 $\frac{1}{2}$	2.85
6"	x	26	11 $\frac{1}{4}$	9	2 $\frac{3}{4}$	3.40
7"	x	26	12 $\frac{1}{2}$	10	3 $\frac{1}{4}$	4.00
8"	x	26	14	11	4 $\frac{1}{2}$	4.65
10"	x	24	17	12	6	5.75
12"	x	24	18 $\frac{3}{4}$	13	8	6.75
14"	x	22	25	17	16	13.00
15"	x	22	26	18	17	16.00
16"	x	22	27 $\frac{1}{2}$	19	20	20.00
18"	x	20	32	21	25	27.00
20"	x	20	36 $\frac{1}{2}$	23	31	33.00
22"		20	38	25	45	36.00
24"		20	43 $\frac{1}{2}$	29	47	40.00
30"		20	50 $\frac{1}{2}$	35	73	65.00
36"		18	68	50	150	120.00
40"		18	74	57	165	180.00
42"		18	78	59	180	190.00
48"		18	84	64	250	240.00
54"		18	92	67	275	300.00
60"		18	99	70	325	360.00
72"		18	111	80	425	480.00

x=Sizes carried in stock.

DISCOUNTS UPON APPLICATION

Also made in Copper

VENTILATORS

"STANDARD"



VENTILATORS

GALVANIZED STEEL

All sizes carried in stock

Opening or Flue Diam.	Gauge Iron	Weights Each	List Price Each
4"	26	1 $\frac{1}{4}$ lbs.	\$2.20
5"	26	1 $\frac{1}{2}$ lbs.	2.40
6"	26	2 $\frac{1}{2}$ lbs.	2.60
7"	26	3 lbs.	2.80
8"	26	3 $\frac{1}{2}$ lbs.	3.20
9"	26	4 $\frac{1}{2}$ lbs.	3.50
10"	24	6 lbs.	4.20
12"	24	8 $\frac{1}{2}$ lbs.	5.40
14"	24	9 $\frac{1}{2}$ lbs.	8.50
16"	24	13 $\frac{1}{2}$ lbs.	12.80
18"	24	15 lbs.	16.50
20"	22	20 $\frac{1}{2}$ lbs.	21.00
24"	22	28 lbs.	26.50

"UNO"



VENTILATORS

GALV. TONCAN METAL AND PAINTED

Sizes in Stock

Size	Weights Each	List Price
4"	3 $\frac{1}{2}$ lbs.	\$7.20
6"	5 lbs.	7.80
8"	8 lbs.	9.00
10"	11 lbs.	12.00
12"	13 $\frac{1}{2}$ lbs.	15.00

Can furnish from mill 15"-18"-21"-24"-30"

Also made up to order in Copper

VENTILATORS

"ESPEY"



VENTILATORS

GALVANIZED STEEL

Size	Gauge Iron	Weights Each	List Price
6"	26	7 lbs.	\$6.00
8"	24	13 lbs.	8.00
10"	24	20 lbs.	10.00
12"	24	31 lbs.	15.00

"FENN VENTILATORS

IMPROVED



ARCHIMEDEAN



Galvanized and Painted

Galvanized

Size	List Price	Size	List Price
6"	\$17.25	6"	\$11.55
8"	22.75	8"	15.50
10"	29.00	10"	19.35
12"	35.25	12"	23.25
15"	53.75	15"	38.50
18"	106.00	18"	93.00
21"	125.50	21"	112.00
24"	145.00	24"	128.50
30"	225.00	30"	197.00

CORNER BEAD



No. 26 GAUGE—GALVANIZED

8 Foot and 10 Foot Lengths

By using Metal Corner Bead a rigid and straight corner is obtained. It also provides a true guide line for plastering, thereby producing a better result. Actually saves money over a hand-turned corner.

DAMPERS

GRISWOLD
"AMERICAN"

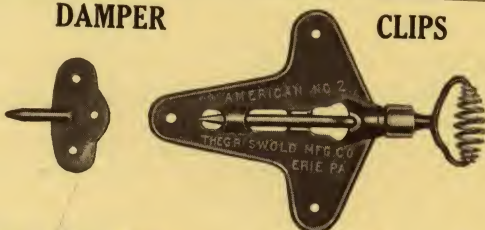
REVERSIBLE
DAMPER



3"-4"-4½"-5"-5½"-6"-7"-8"-9"-10"-12"

DAMPER

CLIPS



No. 1 Tail Pieces

No. 1 and No. 2 Clips

YANKEE

DAMPERS



6"-7"-8"-9"-10"-12"

PIPE COLLARS
JAPPANED

4"-4½"-5"-5½"-6"

DAMPER QUADRANTS

PARKER-KALON DAMPER QUADRANTS



$\frac{3}{8}$ " and $\frac{1}{2}$ "

Authorities on heating and ventilation concede this to be the simplest, neatest and most efficient device yet designed for regulating small and medium size dampers in hot and cold air ducts, blow pipes, etc. It is easily and quickly bolted or riveted to either curved or flat surfaces.

Another feature of this Quadrant is that the handle can be removed at any time, allowing the damper to be removed from the duct when necessary without having to rip out the entire installation.

DIAL DAMPER REGULATORS



$\frac{3}{8}$ "

Here is another practical and efficient device for regulating small and medium size dampers in hot and cold air ducts, blow pipes, etc. It was designed to meet the demand for a less costly damper regulator than the Damper Quadrant.

When tightened, the wing-nut locks the damper in the desired position, giving absolute control of the passage of air.

Both the above furnished in an electro-galvanized finish only.

PARKER-KALON DAMPER ROD CLIPS



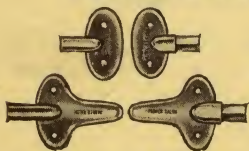
$\frac{3}{8}$ "

Offer a quick and easy means of fastening square rod to dampers.

Easy, because the rod is fastened firmly to the damper without drilling—and consequent weakening of the rod. And quick, because the drilling operation is eliminated. Carried in stock in $\frac{3}{8}$ ".

Can also furnish $\frac{1}{2}$ "- $\frac{5}{8}$ "- $\frac{3}{4}$ "- $\frac{7}{8}$ " from mill.

PARKER-KALON DAMPER BEARINGS



$\frac{3}{8}$ " and $\frac{1}{2}$ "

Used instead of rods on small and medium size dampers. Quickly attached. Made in two sizes— $\frac{3}{8}$ " to fit $\frac{3}{8}$ " Damper Quadrants or Dial Damper Regulators and $\frac{1}{2}$ " to fit $\frac{1}{2}$ " Damper Quadrants or Dial Damper Regulators. Furnished in galvanized finish only.

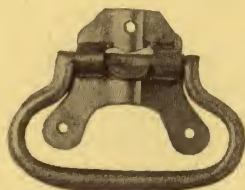
TINNED HANDLES



GUARD DROP HANDLES

3½" 3 to 1¼ Pounds

4" 2 to 1¼ Pounds



LARD CAN DROP HANDLES

3" 8 to 1 Pound

3½" 6 to 1 Pound

4" 4 to 1 Pound



MILK CAN DROP HANDLES

3½" 2 to 1½ Pounds



MILK CAN HANDLES

3½" 2 to 1 Pound

4" 2 to 1¼ Pounds

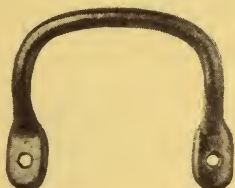
TINNED HANDLES



DISH PAN HANDLES

2" 20 to 1 Pound

3" 14 to 1 Pound



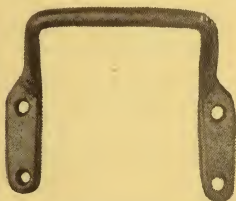
HEAVY DISH PAN HANDLES

3½" 6 to 1 Pound



ASH CAN HANDLES

3½" 4 to 1½ Pounds



ASH CAN HANDLES

4" 3 to 1½ Pounds

TINNED EARS



No. 1
Actual Size

MALLEABLE STAR EARS

No.	Width	Height	No. to 1 Lb.
1	$7\frac{7}{8}$ "	$1\frac{3}{16}$ "	77
2	$1\frac{1}{8}$ "	$1\frac{3}{8}$ "	55
3	$1\frac{3}{8}$ "	$1\frac{1}{2}$ "	38
4	$1\frac{1}{2}$ "	$1\frac{3}{4}$ "	29
5	$1\frac{3}{4}$ "	$1\frac{7}{8}$ "	19
6	2"	$2\frac{1}{8}$ "	16
7	$2\frac{1}{8}$ "	$2\frac{1}{2}$ "	11



No. 20
Actual Size

WROUGHT STAR EARS

No.	Width	Height	No. to 1 Lb.
20	$1\frac{1}{4}$ "	$1\frac{5}{16}$ "	78
30	$1\frac{3}{8}$ "	$1\frac{1}{2}$ "	66
40	$1\frac{5}{8}$ "	$1\frac{3}{4}$ "	39
50	$1\frac{7}{8}$ "	2"	30
60	2"	$2\frac{3}{16}$ "	24
70	$2\frac{1}{4}$ "	$2\frac{1}{2}$ "	17



No. 1
Actual Size

HEAVY STAR EARS

No.	Width	Height	No. to 1 Lb.
1	$1\frac{1}{2}$ "	$1\frac{7}{8}$ "	17
2	$1\frac{3}{4}$ "	$2\frac{3}{16}$ "	13
3	2"	$2\frac{1}{2}$ "	8
4	$2\frac{3}{8}$ "	$2\frac{3}{4}$ "	6

TINNED EARS



No. 1
Actual Size

TINNED HEAVY WASH KETTLE EARS

No.	Width	Height	No. to 1 Lb.
1	1½"	1⅞"	16
2	1⅝"	2⅜"	10
3	2"	2½"	7
4	2½"	2¾"	6

ASH PAN EARS

BLACK

STAMPED



Actual Size

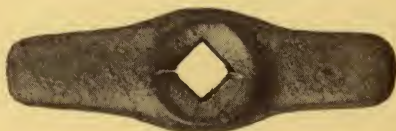
OVEN TURNBUCKLES AND TONGUES



Oven Turnbuckle



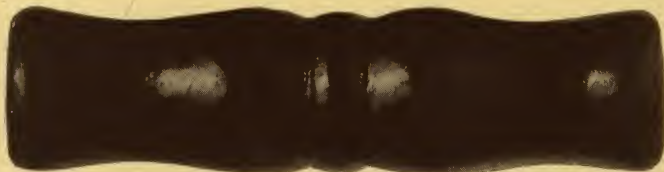
No. 3 1 Inch



Straight Tongue

ACTUAL SIZES

ENAMELED PAIL WOODS



ACTUAL SIZE— $3\frac{1}{2}$ "

Also carried in stock in 4"

ZINC CAN SCREWS



$\frac{1}{2}$ Inch
Actual Size

$\frac{1}{2}$ " Diameter
 $\frac{3}{4}$ " Diameter
1" Diameter
 $1\frac{1}{2}$ " Diameter
2" Diameter

BRASS STRAINER CLOTH

Nos. 40 — 50 — 60

In Rolls 12" wide, 60" long

A fine mesh brass screening for making strainers.

TALC CRAYONS

$\frac{1}{4}'' \times \frac{1}{4}'' \times 5''$

$\frac{3}{16}'' \times \frac{1}{2}'' \times 5''$

For marking black sheets

ROUND CONDUCTOR PIPE

CORRUGATED



10-FOOT LENGTHS

LIST PRICE, PER FOOT

	STEEL			TONCAN METAL, ARMCO INGOT IRON			COPPER
	GALVANIZED AFTER FORMED						UNSOLDERED SEAMS UNLESS SPECIFIED
Size	Stand- ard No. 28	No. 26	No. 24	Stand- ard No. 28	No. 26	No. 24	16 Oz.
2"	\$0.18	\$0.23	\$0.33	\$0.18	\$0.23	\$0.33	\$0.30
3"	.20	.24	.34	.20	.24	.34	.36
4"	.28	.34	.46	.28	.34	.46	.51
5"	.39	.46	.60	.39	.46	.60	.69
6"	.50	.58	.72	.50	.58	.72	.90

PLAIN ROUND



10-FOOT LENGTHS

List Prices same as for Corrugated

Made by Lamb & Ritchie Co., Cambridge, Mass.

We also carry in stock the so-called

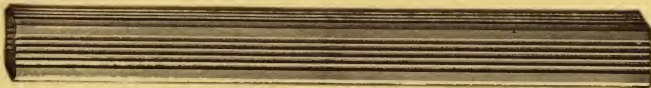
"WESTERN PATTERN"

Corrugated and Plain Round Conductor Pipe

Made from Galvanized Steel Sheets, and Tongan Metal
Galvanized Sheets.

SQUARE CONDUCTOR PIPE

CORRUGATED



10-FOOT LENGTHS

LIST PRICE PER FOOT

STEEL		TONGAN METAL, ARMCO INGOT IRON					COPPER
GALVANIZED AFTER FORMED							UNSOLDERED SEAMS UNLESS SPECIFIED
Size	Stand- ard No. 28	No. 26	No. 24	Stand- ard No. 28	No. 26	No. 24	16 Oz.
1 3/4" x 2 1/4"	\$0.23	\$0.29		\$0.23	\$0.29		\$0.31
2 1/8" x 3"	.24	.30	\$0.40	.24	.30	\$0.40	.40
2 3/4" x 3 7/8"	.31	.38	.50	.31	.38	.50	.53
3 1/2" x 4 3/4"	.42	.50	.65	.42	.50	.65	.75

PLAIN SQUARE



10-FOOT LENGTHS

LIST PRICE PER FOOT

	STEEL			TONGAN METAL, ARMCO INGOT IRON			COPPER
	GALVANIZED AFTER FORMED						
Size	Stand- ard No. 28	No. 26	No. 24	Stand- ard No. 28	No. 26	No. 24	16 Oz.
2" x 3"	\$0.34	\$0.41	\$0.55	\$0.34	\$0.41	\$0.55	\$0.63
2" x 4"	.40	.48	.62	.40	.48	.62	.75
3" x 4"	.47	.55	.79	.47	.55	.79	.88
3" x 5"	.54	.62	.86	.54	.62	.86	1.00
4" x 5"	.60	.68	.92	.60	.68	.92	1.13
4" x 6"	.67	.75	1.00	.67	.75	1.00	1.25

ODD SIZES TAKE NEXT LARGER SIZE

WEIGHT OF CONDUCTOR PIPE

GALVANIZED STEEL AND TONCAN METAL

Weight per 100 Feet

GALVANIZED AFTER FORMATION

Standard No. 28 Gauge

	Round Corrugated	Plain Round	Square Corrugated
2"	54 lbs.	45 lbs.	54 lbs.
3"	66 lbs.	64 lbs.	64 lbs.
4"	86 lbs.	84 lbs.	91 lbs.

"WESTERN PATTERN"

No. 28 Gauge

	Round Corrugated	Plain Round	Square Corrugated
2"	54 lbs.	42 lbs.	53 lbs.
3"	65 lbs.	62 lbs.	63 lbs.
4"	85 lbs.	84 lbs.	89 lbs.

16 oz. COPPER

UNSOLDERED SEAMS

	Round Corrugated	Plain Round	Square Corrugated
2"	65 lbs.	56 lbs.	65 lbs.
3"	82 lbs.	86 lbs.	82 lbs.
4"	109 lbs.	107 lbs.	110 lbs.

OFFSET OF ELBOWS

ROUND CORRUGATED

2	2"	No. 1	Make	4"	Offset
2	2"	No. 2	Make	6"	Offset
2	2"	No. 3	Make	7"	Offset
2	2"	No. 4	Make	8"	Offset
2	3"	No. 1	Make	4½"	Offset
2	3"	No. 2	Make	7"	Offset
2	3"	No. 3	Make	8"	Offset
2	3"	No. 4	Make	8½"	Offset
2	4"	No. 1	Make	5"	Offset
2	4"	No. 2	Make	6½"	Offset
2	4"	No. 3	Make	8½"	Offset
2	4"	No. 4	Make	9½"	Offset

PLAIN ROUND

2	2"	No. 1	Make	4"	Offset
2	2"	No. 2	Make	4½"	Offset
2	2"	No. 3	Make	5½"	Offset
2	2"	No. 4	Make	7"	Offset
2	3"	No. 1	Make	4½"	Offset
2	3"	No. 2	Make	6"	Offset
2	3"	No. 3	Make	7½"	Offset
2	3"	No. 4	Make	9"	Offset
2	4"	No. 1	Make	4½"	Offset
2	4"	No. 2	Make	6"	Offset
2	4"	No. 3	Make	8"	Offset
2	4"	No. 4	Make	10"	Offset

SQUARE CORRUGATED

2	1¾" x 2¼"	No. 1	Make	4"	Offset
2	1¾" x 2¼"	No. 2	Make	6"	Offset
2	1¾" x 2¼"	No. 3	Make	8"	Offset
2	2⅛" x 3"	No. 1	Make	4"	Offset
2	2⅛" x 3"	No. 2	Make	6"	Offset
2	2⅛" x 3"	No. 3	Make	8"	Offset
2	2¾" x 3⅞"	No. 1	Make	4½"	Offset
2	2¾" x 3⅞"	No. 2	Make	7"	Offset
2	2¾" x 3⅞"	No. 3	Make	9"	Offset

ROUND ELBOWS AND SHOES

CORRUGATED



No. 1=45°

$\frac{1}{8}$ Bend

No. 2=60°

$\frac{1}{6}$ Bend

No. 3=75°

$\frac{1}{3}$ Bend

No. 4=90°

$\frac{1}{4}$ Bend

LIST PRICE, EACH

Size	GALVANIZED STEEL		TONGAN METAL, ARMCO INGOT IRON		COPPER, 16 OUNCE	
	Elbows	Shoes	Elbows	Shoes	Elbows	Shoes
2"	\$0.30	\$0.40	\$0.40	\$0.50	\$0.75	\$0.85
3"	.36	.48	.48	.60	1.00	1.10
4"	.60	.75	.75	.90	1.50	1.65
5"	1.25	1.50	1.45	1.65	2.25	2.50
6"	1.50	1.80	1.75	2.00	3.15	3.50

PLAIN ROUND



Plain Round Elbows and Shoes are carried in stock in shapes Nos. 1, 2, 3, 4.

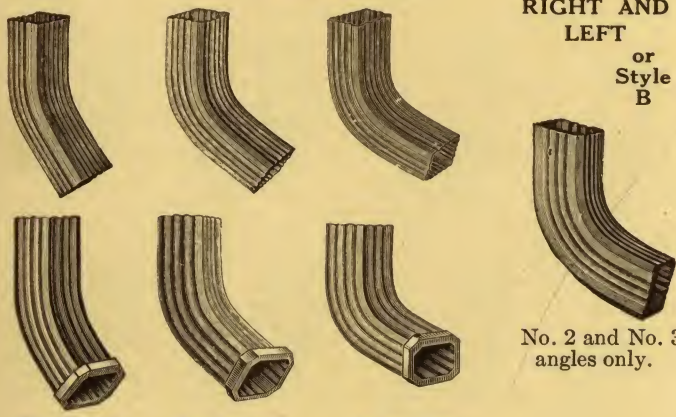


List Price same as for Corrugated

All of above made by Lamb & Ritchie Co., Cambridge, Mass.

SQUARE ELBOWS AND SHOES

CORRUGATED



Size	LIST PRICE, EACH					
	GALVANIZED STEEL		TONCAN METAL, ARMCO INGOT IRON		COPPER, 16 OUNCE	
	Elbows	Shoes	Elbows	Shoes	Elbows	Shoes
1 3/4" x 2 1/4"	\$0.40	\$0.50	\$0.60	\$0.75	\$0.90	\$1.05
2 1/8" x 3"	.50	.60	.70	.85	1.20	1.35
2 3/4" x 3 7/8"	.65	.80	.90	1.10	1.80	2.00
3 1/2" x 4 3/4"	1.00	1.25	1.35	1.60	2.75	3.00

PLAIN SQUARE

Size	LIST PRICE, EACH					
	GALVANIZED STEEL		TONCAN METAL, ARMCO INGOT IRON		COPPER, 16 OUNCE	
	Elbows	Shoes	Elbows	Shoes	Elbows	Shoes
2" x 3"	\$0.90	\$1.10	\$1.15	\$1.35	\$1.50	\$1.70
2" x 4"	1.00	1.20	1.30	1.50	1.65	1.85
3" x 4"	1.10	1.30	1.40	1.60	1.80	2.00
3" x 5"	1.20	1.40	1.55	1.75	2 00	2.20
4" x 5"	1.35	1.60	1.75	2.00	2 20	2.45
4" x 6"	1.50	1.75	1.90	2.15	2 40	2.65

ADJUSTABLE ELBOWS



LIST PRICE, EACH

Size	GALVANIZED	COPPER
	Regular Gauge	16 Ounces
1 1/2" } 2" } 2 1/2" } 3" } 4" } 5" } 6" }	\$0.40 .60 .80 1.10 1.40	\$0.50 .75 1.00 1.50 1.75

WIRE CONDUCTOR STRAINERS

ROUND

SQUARE



LIST PRICE Per Dozen			LIST PRICE Per Dozen		
Size	Galv.	Cop.	Size	Galv.	Cop.
2"	\$1.50	\$3.75	2 x 2	\$4.00	Price on Application
3"	2.00	5.00	2 x 3	4.50	
4"	3.00	8.25	3 x 4	5.75	
5"	5.00	15.00	4 x 5	8.00	
6"	6.00	18.00			



SMALL CONDUCTOR HEADS

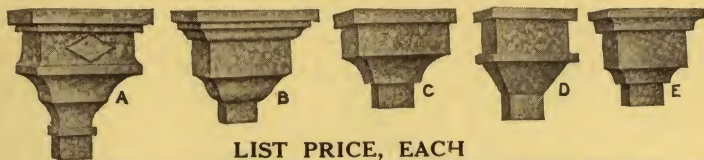


The cuts show the Conductor Head alone, and slipped into the top of a Corrugated Conductor. It makes a cheap, attractive, and convenient finish, no solder being needed.

List price of each size same as a foot of Corrugated Pipe.



LARGE CONDUCTOR HEADS



LIST PRICE, EACH

GALVANIZED STEEL—TONCAN METAL—INGOT IRON						
STYLE	A	B Large	B Small	C	D	E
Galv. No. 28	\$4.50	\$3.75	\$3.00	\$3.00	\$3.00	\$3.00
Galv. No. 26	5.00	4.25	3.50	3.50	3.50	3.50
Galv. No. 24	5.50	4.75	4.00	4.00	4.00	4.00
Copper, 16 oz.	\$9.00	\$7.00	\$4.50	\$4.50	\$4.50	\$4.50

DIMENSIONS OF HEADS

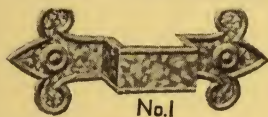
Outlet	Face	Depth	Height	Outlet	Face	Depth	Height
STYLE "A"				STYLE "C"			
3"	11"	7"	13"	2"	7½"	4½"	5½"
4"	12"	8"	14"	3"	8½"	5½"	6"
STYLE "B" (LARGE)				STYLE "D"			
3"	11"	6"	10"	2"	6"	4"	7"
4"	12"	7"	11"	3"	7"	5"	7½"
STYLE "B" (SMALL)				STYLE "E"			
2"	8"	5"	6½"	2"	7"	4½"	6"
3"	8½"	6"	7"	3"	8"	5½"	6½"

When ordering state size and style of outlet wanted.

Heads can be made to other dimensions than shown above if desired.

Special prices quoted on Heads made to sketch.

CONDUCTOR PIPE STRAPS



No.1



No.2



No.3

LIST PRICE, EACH

ALL 3 KINDS	LIST PRICE, EACH	
	Complete	Ends Only per Pair
Galvanized Steel	\$1.00	\$0.40
Toncan Galvanized Metal	1.00	.40
Armco Ingot Iron	1.00	.40
16 oz. Copper	1.00	.40

CONDUCTOR HOOKS

CORRUGATED HINGED HOOKS



Wood



Brick

List Price per 100, Tinned

	2 Inch	3 Inch	4 Inch	5 Inch	6 Inch
Wood, S. S.	\$15.70	\$20.70	\$29.00		
Wood, L. S.	17.30	22.80	35.00	\$41.50	\$57.00
Brick	19.00	24.60	35.00	43.60	58.80

PLAIN ROUND HINGED HOOKS



Wood



Brick

List Price per 100, Tinned

	2 Inch	3 Inch	4 Inch	5 Inch	6 Inch
Wood	\$15.50	\$20.80	\$27.20		
Brick	18.40	23.60	27.60	\$45.60	\$60.00

LENGTH OF SHANKS

Kind	Size	Wood, Short Shank	Wood, Long Shank	Brick
Corrugated	2"	2 1/2"	3 5/8"	2 1/2"
	3"	3"	4"	3 1/4"
	4"	3 1/4"	4 1/4"	3 1/4"
	5"	6"	6"	3 3/4"
	6"			4 1/4"
Plain Round	2"	2 1/4"		2 1/2"
	3"	2 3/4"		2 3/4"
	4"	3"		3 1/4"
	5"	4 1/4"		3 1/2"
	6"	5"		4"

CONDUCTOR HOOKS

WIRED HOOKS

List Price per 100, Tinned



		2 Inch	3 Inch	4 Inch	5 Inch
Wood	Round	\$9.80	\$10.60	\$16.20	\$24.40
	Square	9.40	13.60	17.00	
Brick	Round	11.60	17.60	21.60	24.40
	Square	11.60	17.60	21.60	



LENGTH OF SHANKS

	Wood, Round	Wood, Square	Brick, Square
2"	2 1/2"	2 1/2"	2 3/4"
3"	3 1/4"	3"	2 3/4"
4"	3 1/2"	3 1/4"	3"
5"	4 1/2"	3 1/2"	3"

SICKLE HOOKS

List Price per 100, Tinned



Wood

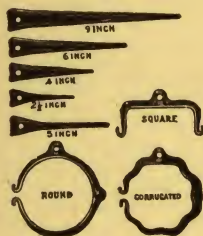
	2 Inch	3 Inch	4 Inch	5 Inch	6 Inch
Wood	\$7.00	\$12.00	\$14.40	\$24.60	\$32.80
Brick	9.20	13.50	19.40	26.40	37.00



Brick

CLASP PIPE HOOKS

List Price per 100, Tinned



CLASPS	3 Inch	4 Inch	5 Inch	6 Inch
Round	\$20.80	\$30.80	\$39.60	\$50.00
Corrugated	22.00	30.80	36.60	48.80
Square	13.40	17.80	21.20	

DRIVES

3" Wood Drive	\$5.00
5" Wood Drive	9.40
4" Brick Drive	9.20
6" Brick Drive	17.80
9" Brick Drive	27.00

The advantages are that, with a small assortment of Clasps and Drives, a variety of pipe can be fastened to wood, brick or stone, at any distance from the wall.

EAVES TROUGH—GUTTER

LAP JOINT—10 FOOT LENGTHS



LIST PRICE, PER FOOT

	Size	GALVANIZED STEEL			TONGAN METAL AMERICAN INGOT IRON			COPPER
		No. 28	No. 26	No. 24	No. 28	No. 26	No. 24	16 Oz.
SINGLE-BEAD	3 1/2"	11	21		17	21		
	4"	19	23	33	19	23	33	32
	5"	20	24	34	20	24	34	36
	6"	25	31	40	25	31	40	44
	7"	32	40	50	32	40	50	54
	8"	42	50	60	42	50	60	63
DOUBLE-BEAD	Size	No. 28	No. 26	No. 24	No. 28	No. 26	No. 24	16 Oz.
	3 1/2"	23	28		23	28		
	4"	25	30	44	25	30	44	40
	5"	27	32	45	27	32	45	45
	6"	33	40	55	33	40	55	55
	7"	39	50	60	39	50	60	64
	8"	50	60	70	50	60	70	75

SLIP JOINT—10 FOOT LENGTHS



LIST PRICE, PER FOOT

	Size	GALVANIZED STEEL			TONGAN METAL AMERICAN INGOT IRON			COPPER
		No. 28	No. 26	No. 24	No. 28	No. 26	No. 24	16 Oz.
SINGLE BEAD	3 1/2"	19	23		19	23		
	4"	21	25	35	21	25	35	35
	5"	22	26	36	22	26	36	39
	6"	27	33	42	27	33	42	47
	7"	34	42	52	34	42	52	57
	8"	44	52	62	44	52	62	66
DOUBLE-BEAD	Size	No. 28	No. 26	No. 24	No. 28	No. 26	No. 24	16 Oz.
	3 1/2"	25	30		25	30		
	4"	27	32	46	27	32	46	43
	5"	29	34	47	29	34	47	48
	6"	35	42	57	35	42	57	58
	7"	41	52	62	41	52	62	67
	8"	52	62	72	52	62	72	78

In ordering Slip Joint, state whether Right Hand or Left Hand is wanted. Otherwise half of each kind will be shipped.

GUTTER MITRES



Inside Mitre

GALVANIZED
Steel
Toncan Metal
Armco Ingot Iron



Outside Mitre

LIST PRICE, PER DOZEN—SINGLE BEAD

Size	LAP JOINT			SLIP JOINT		
	No. 28	No. 26	No. 24	No. 28	No. 26	No. 24
3½"	\$7.50	\$9.00		\$10.50	\$12.00	
4"	8.00	9.50	\$13.00	11.00	12.50	\$16.00
5"	9.25	11.00	15.00	12.25	14.00	18.00
6"	11.75	14.00	18.00	14.75	17.00	21.00
7"	15.75	18.50	21.50	18.75	21.50	24.50
8"	19.00	22.00	25.00	22.00	25.00	28.50

ADD \$3.00 to list for Double Bead.

16 OZ. COPPER

LIST PRICE, EACH

Size	LAP JOINT		SLIP JOINT	
	Single Bead	Double Bead	Single Bead	Double Bead
4"	\$0.95	\$1.20	\$1.20	\$1.45
5"	1.10	1.35	1.35	1.60
6"	1.70	1.95	1.95	2.20
7"	2.15	2.40	2.40	2.65
8"	2.75	3.00	3.00	3.25

In ordering Mitres, state whether "Inside" or "Outside" are wanted; and, if Slip Joint, state whether "Rights" or "Lefts" are wanted. Otherwise half of each kind will be shipped.

GUTTER END FORMER



For closing end of Gutter.

Carried in sizes to fit

3½"—4"—4½"—5"—6"—Gutter.

GUTTER ENDS

GALVANIZED

Steel, Toncan Metal, American Ingot Iron



End Caps



Ends with Outlets



Drops or Outlets

LIST PRICE, PER DOZEN

ENDS WITH OUTLETS—SINGLE BEAD				ENDS WITH OUTLETS—DOUBLE BEAD			
Size	No. 28	No. 26	No. 24	No. 28	No. 26	No. 24	Size
3 1/2"	\$6.00	\$8.00		\$7.00	\$9.00		3 1/2"
4"	6.75	9.00	\$11.00	7.75	10.00	\$12.00	4"
5"	7.50	10.00	12.00	8.50	11.00	13.00	5"
6"	9.00	11.50	14.00	10.00	12.50	15.00	6"
7"	10.50	13.00	16.00	11.50	14.00	17.00	7"
8"	12.00	15.00	19.00	13.00	16.00	20.00	8"

END CAPS				DROPS			
Size	No. 28	No. 26	No. 24	Size	No. 28	No. 26	No. 24
3 1/2"	\$2.10	\$3.10		2"	\$1.40	\$2.40	\$4.40
4"	2.40	3.40	\$4.75	3"	1.80	2.80	4.80
5"	2.75	3.75	5.00	4"	2.20	3.20	5.20
6"	3.25	4.25	5.50	5"	2.60	3.60	5.60
7"	3.85	4.85	6.75	6"	3.00	4.00	6.00
8"	4.75	5.75	8.00				

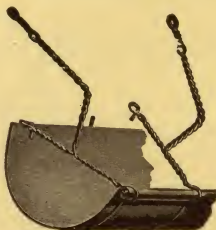
In ordering Drops state for what size of eaves trough they are wanted.

16 OZ. COPPER

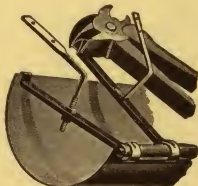
LIST PRICE, PER DOZEN

Size	ENDS WITH OUTLETS		End Caps	Size	Drops
	Single Bead	Double Bead			
4"	\$1.45	\$1.70	\$0.40	2"	\$0.30
5"	1.60	1.85	.50	3"	.40
6"	1.85	2.10	.55	4"	.50
7"	2.25	2.50	.65	5"	.60
8"	2.75	3.00	.85	6"	.70

GUTTER HANGERS



Wire Hanger



Steel Hanger

LIST PRICE, PER GROSS

Size	Bead	Wire, Single Bead	Wire, Double Bead	Steel, Single Bead	Steel, Double Bead	Rods and Nuts Only, Assorted Lengths
3 1/2"	1 1/2"	\$5.50	\$6.00	\$8.50	\$9.00	\$4.50
4"	1 1/2"	5.50	6.00	9.00	9.50	4.50
5"	1 1/2"	6.00	6.50	9.50	10.00	4.50
6"	5/8"	7.00	7.50	10.50	11.00	4.50
7"	5/8"	8.00	8.50	12.50	13.00	4.50
8"	5/8"	9.00	9.50	16.50	17.00	4.50



HANGER TONGS

For Clinching Hangers

RIVAL STRAP HANGERS

A Reliable Hanger made of Heavy Gauge Copper
or Galvanized Steel.
(Single Bead Only.)



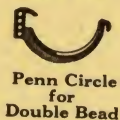
Galvanized

4 inch
5 inch
6 inch

Copper

4 inch
5 inch
6 inch

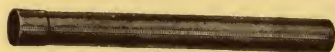
SHANKS AND CIRCLES



LIST PRICE, PER 100

	3½ Inch	4 Inch	5 Inch	6 Inch	7 Inch	8 Inch
Tinned Circles, with Bolts.....	\$13.90	\$14.60	\$17.90	\$23.60	\$34.00	\$38.80
	No. 7	No. 8	No. 9	No. 13		
Tinned Shanks....	\$13.50	\$19.30	\$13.80	\$20.30		

SPEAKING TUBE AND FITTINGS



Made in 2-30" pieces
Soldered together=5 feet

All 1" Diameter

Speaking Tube price
on application.



Round
Elbow



Square
Elbow



Lobster Back
Elbow



One Eighth
Elbow



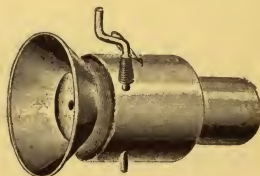
Coupler



Tee

LIST PRICE, PER 100

Round Stamped Elbows	\$12.00
Square Elbows	5.60
Lobster Back Elbows	8.00
One-Eighth Elbows	5.60
Couplers	4.00
Tees	14.00



LIST PRICE

Porcelain Whistles } Plain or Indi-	\$4.00 per dozen
Nickeled Whistles } cator	5.60 per dozen
Porcelain Mouth Pieces	2.00 per dozen
Nickeled Mouth Pieces	4.00 per dozen
Two-Foot Flexible Wall Tubes, complete with Whistle and Flanged Collar	4.00 each
Flexible Wall Tubes, without Whistle and Flanged Collar .....	.60 per foot
Coppered Staples .....	.80 per pound
Nickeled Tube Holder	3.00 per dozen

HAND SNIPS

STRAIGHT SNIPS



Original P. S. & W. Co. Pattern

Left Hand Cut for Right Hand Man

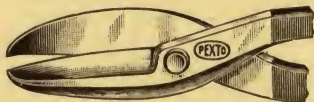
Our highest grade of Tinnern's Snip. Used by sheet metal workers throughout the world. Forged steel with tool steel cutting-blades. As always, of the highest grade of excellence and fully warranted—maintaining a reputation gained by a century of experience.

Nos.	Length of Cut	Length Overall	Will Cut Iron No.	Weight, Pounds
6½	4½"	15¾"	24	3½
7	4"	14¼"	25	2⅞
8	3½"	13½"	26	2¼
9	3"	12"	27	1¾
10	2½"	11"	28	1¼
11	2¼"	10¼"	28	1
12	2"	8½"	28	⅝
13	1¾"	8"	28	½

Right Hand Cut for Left Hand Man

Nos. 6½-7-8-9-10

CURVED SNIPS



Original P. S. & W. Co. Pattern

Left Hand Cut for Right Hand Man

The description, detail of capacity, weights, etc., are exactly the same as shown above on the Straight Snips.

Nos. C6½-C7-C8-C9-C10

Curved Snips for left hand man can be obtained promptly from the manufacturer.

HAND SNIPS

HERCULES SNIPS



These Snips are made so as to easily cut circles, scrolls, etc., and are equally adapted to the same class of work as the regular snips. The jaws are bevelled with straight cutting edges.

Nos.	Length of Cut	Length Overall	Will Cut Iron No.	Weight, Pounds
146	4½"	15½"	24	3⅞
147	4"	14½"	25	3
148	3½"	13½"	26	2¼
149	3"	12½"	27	2

LYON SNIPS



These Snips are especially adapted to cornice and tin work. They are made to cut circles, scrolls, etc., very easily, but they are equally well adapted for regular snip work. The blades are rounding and sharp pointed and can be used for very delicate work.

Nos.	Length of Cut	Length Overall	Will Cut Iron No.	Weight, Pounds
165	4"	15½"	24	3⅞
170	3½"	14"	25	2¾
180	3"	13"	26	2¼
190	2¾"	11½"	27	1⅝

HAWKS BILL SNIPS



Combination Scroll and Circular

Due to the shape of the blades, these Snips are especially useful for cutting irregular shapes. They will cut on a straight line, or cut circles of much smaller radii than other shears, either inside or outside a sheet of metal.

No. 15 Length of cut 3"; length overall 11¾"; weight 1¼ lbs.

Will cut No. 28 Iron

HAND SNIPS

PARKINS ENGLISH SNIPS



Curved Blade
8"—9"—10"

COMPOUND LEVER SNIPS



The design of the Compounding Lever action gives an evenly distributed cutting strain from a close-throat start to the finish at the point of the blade.

No.	Total Length, Inches	Length of Blade, Inches	Cut, Inches	Weight, Lbs. Oz.
7	7	1½	1¼	5
8	8	2	1¾	10
10	10½	3	2½	1— 2½
12	12	3½	3	1—14
14	14	4¼	3½	2— 9

DOUBLE CUTTING SNIPS



OLD CUTTING METHOD.

DOUBLE CUTTING SHEARS
POCKET SIZE NO. 22.

NEW METHOD.



CRIMPED WITH ATTACHMENT
FITTED TO SHEARS NO. 2.



DOUBLE CUTTING SHEARS NOS. 2 AND 22.



OLD METHOD.

Finish—Black Handles and Polished Heads

The Handles are Malleable Iron and the Blade is Forged Steel with hardened cutting edge. Great care is exercised in assembling for permitting a joint of pipe to be cut with ease and accuracy, leaving the edges smooth and clean.

Number	2A	02A	22
Weight, per dozen . . . pounds	36	36	12
Length over all inches	12¾	12¾	8½
No. 02A same as No. 2A without crimping attachment.			

SHEARS

BENCH SHEARS

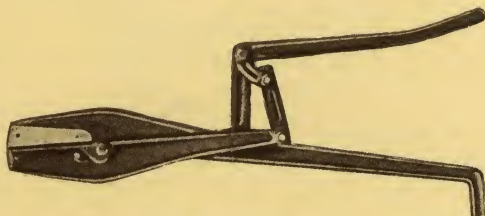


As regularly made, Bench Shears have a right hand cut with the lower blade on the right side of the shear. These shears are much larger than the ordinary tinner's hand shears.

Nos.	Shears	Length of Cut	Length Overall	Will Cut Iron No.	Weight, Pounds
0	Bench	10 $\frac{1}{2}$ "	42 $\frac{1}{2}$ "	18	30
1	Bench	9"	39"	18	24
2	Bench	8 $\frac{3}{4}$ "	37"	19	19
4	Bench	7 $\frac{3}{8}$ "	30"	20	12
5	Bench	6 $\frac{1}{4}$ "	27"	21	9
6	Bench	5 $\frac{1}{4}$ "	25"	22	8 $\frac{1}{4}$
31	Elbow	4"	26"	18	9 $\frac{1}{2}$
32	Elbow	6"	39"	16	26
33	Elbow	7 $\frac{1}{2}$ "	46"	14	48

All Bench Shears have Black Handles and Polished Heads.

VIKING SHEARS



New Style Interchangeable Blades

Will cut $\frac{3}{16}$ " Common Iron, 12 Ga. Bessemer Steel, $\frac{1}{4}$ " Brass.

Length 34", Blades 5 $\frac{1}{2}$ " long, $\frac{1}{4}$ " thick.

HAMMERS AND MALLETS



RIVETING HAMMERS

Polished Head, Hickory
Handle

Number	0	1	2	3	4	5
For	Heavy Work	Sheet Iron	Tin	Tin	Tin	Tin
Size Face inches	1½	1⅞	1	7⁄8	¾	5⁄8
Weight...each ounce	40	24	18	14	10	6



SETTING HAMMERS

Polished Head, Hickory
Handle

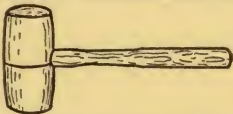
Number	1	2	3	4	5
Size Face inches	1⅞	1	7⁄8	¾	5⁄8
Weight...each ounce	24	18	14	10	6



BUMPING OR FINISHING HAMMER

Black Finish, Polished
Faces, Hickory Handle

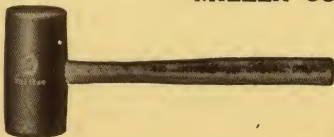
Number	10
Weight without Handles	ounces 14
Size of Square Face	inches 1¼
Diameter of Round Face	inches 1¼
Length of Head	inches 4
Length Over all	inches 12½



WOOD MALLETS

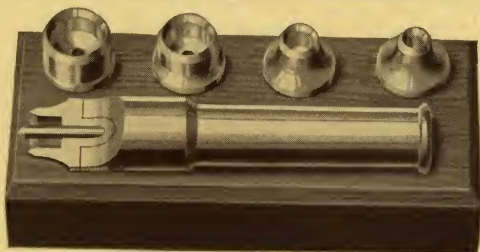
2"-2¼"-2½"-3"

MILLER COMPOSITION MALLETS



No. 8 2" Face
No. 16 2½" Face
No. 24 2⅞" Face
No. 41 3½" Face
Won't chip, crack,
or check

HOLLOW PUNCH SET



HOLLOW PUNCH SET

No. 1

Complete in wood case one handle and five punches:

$\frac{3}{8}$ "

$\frac{1}{2}$ "

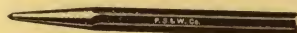
$\frac{5}{8}$ "

$\frac{3}{4}$ "

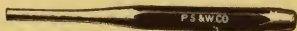
$\frac{7}{8}$ "

HAND TOOLS

PRICK PUNCH



SOLID PUNCHES



Octagon Forged Steel

Number	Prick	00	0	1	2	3	4
Size Face, Diam..ins.		.355	.305	.280	.250	.225	.213
Length	4½	5	5	4¾	4¾	4½	4½
For Rivets.....lbs.			16	14	12	9,10	7,8
Number	5	6	7	8	9	10	
Size Face, Diam..ins.	.188	.168	.145	.128	.114	.093	
Length	4½	4½	4½	4½	4½	4½	
For Rivets.....lbs.	4,5,6	3,3½	2,2½	1¼, 1½, 1¾	¾, 7/8, 1	½, 5/8	

HOLLOW PUNCHES



Forged Steel

¼"-¾"-½"-5/8"-¾"-7/8"-1"-1¼"
1½"-1¾"-2"-2½"-3"

RIVET SETS



Special Forged Steel—Full Polished

Size	00	0	1	2	3	4
Size Hole.....inches	5/16	9/32	15/64	.2130	.1910	.1660
Size Drill.....inches	5/16	9/32	15/64	3	11	19
For Rivets	14,16	10,12	7,8	6	4,5	3,3½
Size	5	6	7	8		
Size Hole.....inches	.1495	.1405	.1285	.1100		
Size Drill.....inches	25	28	30	35		
For Rivets	2,2½	1½, 1¾	1, 1¼	10, 12oz.		

HAND TOOLS

HAND GROOVERS



Hand Forged

Number	00	0	1	2	3	4	5	6	7	8
Size Groove .....inches	$\frac{7}{16}$	$\frac{3}{8}$	$\frac{11}{32}$	$\frac{5}{16}$	$\frac{9}{32}$	$\frac{7}{32}$	$\frac{5}{32}$	$\frac{1}{8}$	$\frac{7}{64}$	$\frac{3}{32}$
Weight.....pounds	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{7}{8}$	$\frac{7}{8}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$

SCRATCH AWLS

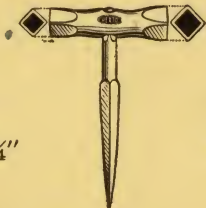


Scratch Awls that make their appeal to the Sheet Metal Worker owing to their correct balance, shape and practical construction. The steel shank goes through the handle, reinforcing its top and offering a solid steel surface for tapping with a hammer. The points are properly hardened for making them more practical for use on sheet iron.

Number	21	22
Length Overall.....inches	$5\frac{7}{8}$	$6\frac{1}{2}$
Shipping Weight, per dozen.....pounds	$1\frac{1}{2}$	$2\frac{1}{4}$

SHEET METAL REAMER AND SOCKET WRENCH

$\frac{1}{2}$ "
Square Hole



$\frac{5}{8}$ "
Square Hole

Length 7"

Length Reamer $4\frac{1}{4}$ "

Length Handle 4"

Weight $\frac{1}{2}$ lb.

HAND TOOLS

CUTTING NIPPERS



With Interchangeable Cutters

Number	0	1	3	4	5
Length.....inches	14	12	10	8	6
Width Cutting Jaw...inches	2	1½	1¼	1⅙	1⅙
Weight.....pounds	3½	2¼	1½	1	¾

FLAT NOSE PLIERS



Box Joint, Flat Nose, Forged Steel

Length.....inches	6	7	8
Weight per dozen .....pounds	3¾	6¾	9

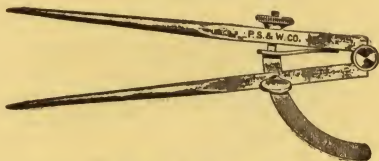
HANDY SEAMER



Number	791
Length of Blade.....inches	3½
Width of Blade .....inches	⅞
Size Overall .....inches	7¼ x 3½
Adjustable for Seams of different Widths up to ....inches	⅞
Weight, each .....pounds	1

HAND TOOLS

DIVIDERS



Nickel Plated

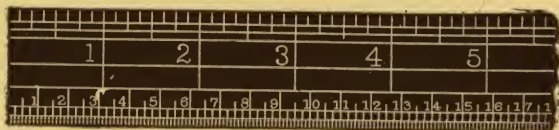
8"

9"

10"

12"

CIRCUMFERENCE RULE



Polished

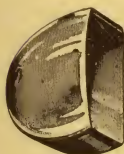
A Steel Rule that will prove invaluable for laying out work in general. The cut is an exact representative so far as shown. The upper line is the Ordinary Rule. The lower line shows at a glance the exact circumference of any cylinder by simply ascertaining the diameter. The reverse side contains much useful information in large, plain figures regarding the sizes of sixty different articles, such as cans, measures, pails, etc., with straight or flaring sides, flat or pitched top, liquid and dry measure in quarts, gallons and bushels.

No. 101 = 3 feet

No. 0101 = 4 feet

DOLLY BLOCKS

Full Polished



No. 915

Length $2\frac{3}{8}$ "
Width $3\frac{1}{4}$ "
Thickness $1\frac{1}{2}$ "
Weight $2\frac{1}{2}$ lbs.

Patterned to fit the hand. Have beveled and sharp edges.

Particularly adapted for fender repair work.

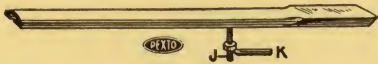


No. 916

Length $4\frac{3}{4}$ "
Width $2\frac{3}{8}$ "
Thickness 1"
Weight $2\frac{3}{4}$ lbs.

TINSMITH STAKES

HOLLOW MANDREL STAKES



Number	910
Weight.....	pounds 60
Entire Length	inches 40
Length Flat Part.....	inches 9
Width Flat Part	inches 6
Length Oval Part	inches 31
Size Oval Part Radius of Circle	inches 2

SOLID MANDREL STAKES
Cast Iron With Polished Faces



Number.....	960 1/2	961
Weight	pounds 86	56
Length to Standard.....	inches 40	34 1/2
Diameter	inches 3	2 3/4

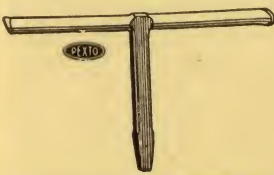
DOUBLE SEAMING STAKE
WITH FOUR HEADS

Cast Iron With Polished Faces



New Number ..	949	Ext.Heads	A	B	C	D
Weight.....lbs.	110					
Length from Top of Head to Standard .ins.		4¼	2½	2½	2¾	
Size of Square and Oval Heads....ins.	6	8½x2⅝x3¼	5½x4½	5¾x4¼x3¾		
Diameter Round Headins.						

DOUBLE SEAMING STAKE
Wrought Iron With Steel Faces



Number.....	921
Weight	pounds 37
Large End, Length.....	inches 17
Small End, Length.....	inches 12
Size Each End.....	inches 1 3/4 x 3

TINSMITH STAKES

BEVEL EDGE
SQUARE STAKE



COPPERSMITHS'
SQUARE STAKE



SQUARE STAKE



Wrought Iron With Steel Faces

Bevel Edge
Square Stake

Coppersmiths'
Square Stake

Square Stake

Number	931	935	936
Weight.....pounds	16	11	11
Size Face.....inches	3 x 5	2 $\frac{3}{4}$ x 4 $\frac{1}{2}$	2 $\frac{3}{4}$ x 4 $\frac{1}{2}$

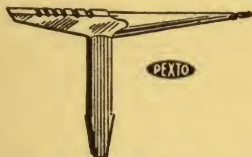


ROUND HEAD STAKE

Cast Iron—Polished Face

Number.....	965
Weight.....pounds	9 $\frac{1}{2}$
Entire Length.....inches	12 $\frac{1}{2}$
Diameter Head.....inches	3

CREASING STAKES



Wrought
Iron
With
Steel Faces



No. 927, with Horn

No. 928, Plain

Number	927	928
Weight.....pounds	12	11 $\frac{1}{2}$
Size Grooves for Wire..... number	2, 3, 6, 7, 8, 9	1, 3, 4, 6, 7, 9
Round End, Length.....inches	12	
Flat End, Length.....inches	6 $\frac{3}{4}$	
Entire Length Top.....inches		15
Diameter Round End at Wide Point.inches	1 $\frac{1}{2}$	
Diameter Round End Narrow Point.inches	$\frac{7}{16}$	



HATCHET STAKES

Wrought Iron With Steel Faces

Number.....	941	943	944
Weight.....pounds	14	8 $\frac{1}{2}$	6 $\frac{1}{2}$
Length Blade.....inches	16	13	11
Width Blade at Center...inches	2 $\frac{1}{2}$	2 $\frac{1}{8}$	2 $\frac{1}{8}$
Width Blade at Ends.....inches	1 $\frac{5}{8}$	1 $\frac{1}{4}$	1 $\frac{3}{8}$

TINSMITH STAKES



**Wrought Iron
With Steel Faces**

NEEDLE CASE STAKE

Number.....	957
Weight	pounds 4
Round End, Length	inches 10½
Flat End, Length	inches 8
Width Flat End	inches 1
Diam. Round End at Smallest Point ..	inches ¾
Diam. Round End at Largest Point ..	inches ⅝



**Wrought Iron
With Steel Faces**

CANDLE MOULD STAKE

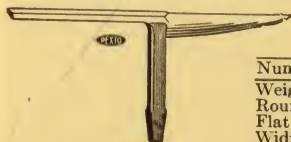
Number.....	956
Weight	pounds 7½
Large End, Length	inches 18½
Small End, Length	inches 9½
Diam. Small End at Wide Point	inches 1¼
Diam. Small End at Narrow Point ..	inches ½
Diam. Large End at Wide Point	inches ⅞
Diam. Large End at Narrow Point ..	inches ½



**Wrought Iron
With Steel Faces**

BLOW HORN STAKE

Number.....	925
Weight	pounds 14
Large End, Length	inches 9
Small End, Length	inches 18
Diam. Small End at Wide Point	inches 1½
Diam. Small End at Narrow Point ..	inches ¾
Diam. Large End at Wide Point	inches 4¾
Diam. Large End at Narrow Point ..	inches ½



**Wrought Iron
With Steel Faces**

BEAKHORN STAKES

Number.....	901
Weight	pounds 46
Round End, Length	inches 16½
Flat End, Length	inches 21½
Width of Flat End, Tapers	inches 2½x1¾
Diam. Round End at Smallest Point ..	inches ¾
Diam. Round End at Largest Point ..	inches 2½

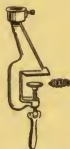


**Wrought Iron
With Steel Faces**

CONDUCTOR STAKE

Number.....	930
Weight	pounds 25
Length Large End	inches 14
Length Small End	inches 14
Diam. Large End	inches 1¾
Diam. Small End	inches 1¾

MACHINE STANDARDS



REGULAR OFFSET No. 975 WIRING OFFSET No. 976

Number	975	976
Size Hole.....inches	15⁄8	15⁄8
Height Over all from Bench	93⁄4	93⁄4
Shipping Weight	101⁄2	11

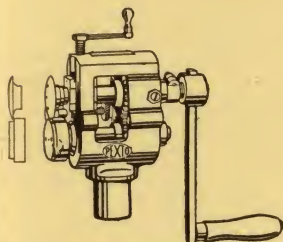
BENCH PLATE OR STAKE HOLDER



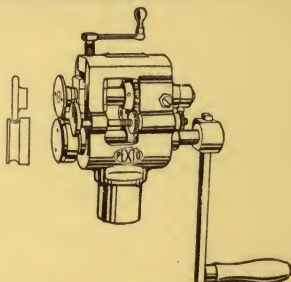
Cast Iron

Number.....	981	982
Weight .....pounds	46	31
Length .....inches	371⁄2	30
Width .....inches	8	8

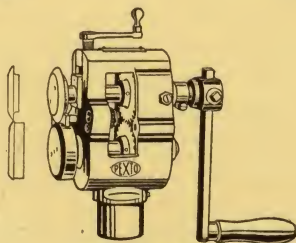
COLUMBIAN BENCH MACHINES



BURRING MACHINE
or
(Thin Edge)



TURNING MACHINE
or
(Thick Edge)



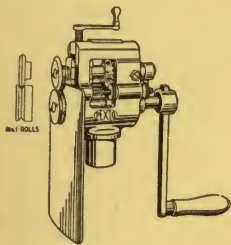
WIRING MACHINE

COLUMBIAN BENCH MACHINES Capacity—No. 22 Gauge and Lighter

	Sm. Burr	Lge. Burr	Sm. Turn.	Lge. Turn.	Wiring Mch.
Number	576	577	541	542	525
Diameter Rolls.....ins.	1½	2⅛	2⅛	3	3
Widest Flange or Burr that can be turned...ins.	⅜	¼			
Smallest Wire that can be used, Gauge	No.		11	9	
Largest Wire that can be used, Gauge	No.		7	4	0
Shipping Weight, Approx- imate	lbs. 26	31	31	36	36

Furnished complete with offset standard No. 975. Wiring Machine furnished with Standard No. 976, page 63. Extra upper roll furnished with Burring Machines and extra pair of thick turning rolls with Turning Machines. Forming Roll Gauge furnished with Wiring Machines at an extra cost and only when specified. Foot treadle attachment for depressing upper roll in place of crank screw when specified can be furnished at an extra cost.

COLUMBIAN ELBOW EDGING MACHINE



Capacity—No. 24 Gauge Iron
and Lighter

Number	551
Diameter Rolls inches	2 1/8
Packed One in a Box, Weight, Approximate pounds	30
Apron Gauge is extra and will not be sent unless ordered.	
Furnished with Regular Offset Standard No. 975.	

COLUMBIAN SETTING DOWN MACHINE



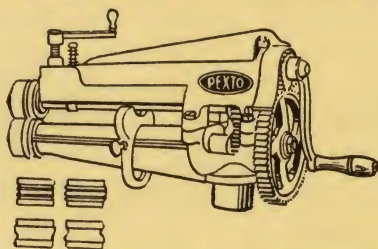
Capacity—No. 24 Gauge Iron
and Lighter

Number	556
For Seams up to inches	3/16
Packed One in a Box, Weight, Approximate pounds	23

This type of Setting Down Machine is preferable for closing the seams in light tinware, etc. Regular Offset Standard No: 975 is furnished.

BEADING MACHINES

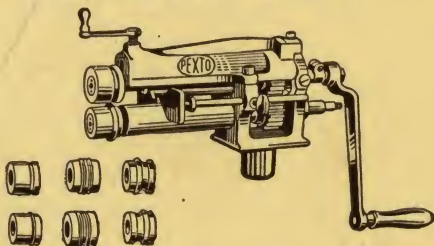
STANDARD BEADING MACHINE



Capacity—No. 20 Gauge Iron and Lighter

	Hand	Hand
Number	617	619
Depth Throat to Frame inches	13	7½
Depth Throat to Gauge inches	12	6¾
Distance between Shaft Centers inches	25⅝	21¼
Diameter Rolls inches	2¾	2⅜
Width Rolls inches	1⅞	1⅝
Ratio of Gearing	3⅛-1	2½-1
Size Single Bead in Rolls inches	⅜	5/16
Size Ogee Bead in Rolls inches	1	7/8
Size Triple Bead in Rolls inches	1	7/8
Shipped Boxed, Weight, Approximate pounds	165	110

LIGHT BEADING MACHINE



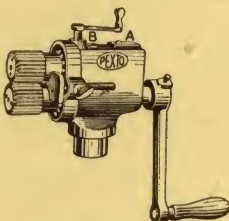
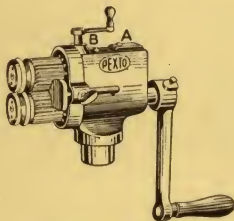
Capacity—No. 24 Gauge Iron and Lighter

Number	620
Depth Throat to Frame inches	6¼
Depth Throat to Gauge inches	6
Diameter of Rolls inches	1⅝
Width of Rolls inches	1⅞
Distance between Shaft Centers inches	1⅞
Shipped Boxed, Weight, Approximate pounds	50

Furnished with four pairs Rolls; one pair each Ogee ¾-inch, triple ⅝-inch, single ¼-inch and ⅜-inch.

CRIMPING AND BEADING MACHINES

COMBINATION CRIMPER AND BEADER



Crimper and Beader

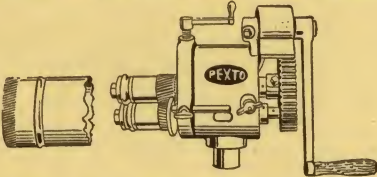
As a Plain Crimper

Capacity—No. 24 Gauge Iron and Lighter

	Spiral Crimp	Straight Crimp
Number	581	0581
Width Crimping Rolls .....inches	1 ³ / ₄	1 ³ / ₄
Width Beading Rolls .....inches	1	1
Diameter Beading Rolls .....inches	1 ¹⁵ / ₁₆	1 ¹⁵ / ₁₆
Diameter Crimping Rolls.....inches	1 ¹³ / ₁₆	1 ¹³ / ₁₆
Size Ogee Bead .....inches	1 ¹ / ₂	1 ¹ / ₂
Shipped Boxed, Weight, Approximate...pounds	30	30

Furnished complete with one pair of steel blank collars and offset bench standard.

WIDE SPAN CRIMPER AND BEADER

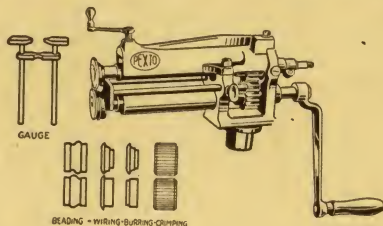


Capacity—No. 24 Gauge Iron and Lighter

	Straight
Number	0595
Diameter Beading Rolls .....inches	1 ¹⁵ / ₁₆
Diameter Crimping Rolls.....inches	1 ¹³ / ₁₆
Width Crimping Rolls .....inches	1 ¹ / ₄
Width Beading Rolls .....inches	1
Size of Ogee Bead .....inches	9 ¹ / ₁₆
Width Blank Space between Edge of Crimp and Bead when using a Crimp, Inch Wide .....inches	1 ³ / ₄
Ratio of Gearing	3-1
Distance between Shaft Centers.....inches	1 ³ / ₄
Shipped Boxed Regularly, Weight, Approximate ...pounds	70

ALLINWON ROTARY MACHINE

FIVE OPERATIONS WITH ONE MACHINE



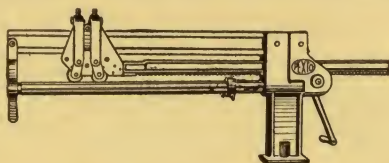
**Capacity—Using Crimping or Beading Rolls No. 26 Gauge
Iron and Lighter**

**Capacity—Using Turning, Wiring or Burring Rolls No. 24
Gauge Iron and Lighter**

Number	622
Depth Throat to Frame	inches 6 $\frac{1}{4}$
Depth Throat to Gauge	inches 5 $\frac{1}{2}$
Width Crimping Rolls	inches 1 $\frac{7}{16}$
Width Beading Rolls	inches 1 $\frac{7}{16}$
Diameter Turning and Wiring Rolls	inches 1 $\frac{7}{8}$
Smallest Wire that can be used with Turning Rolls	gauge 11
Wiring Rolls will receive Wire up to	gauge 5
Widest Flange or Burr that can be turned with Burring Rolls	inches $\frac{3}{16}$
Distance between Shaft Centers	inches 1 $\frac{7}{8}$
Packed One in a Box, Weight, Approximate	pounds 60

Furnished complete with standard and five pairs of rolls, viz.: crimping, beading, turning, wiring and burring and one extra gauge. Extra special rolls quoted on receipt of specifications. Provided with forward and reverse drive.

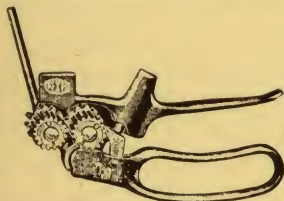
GENERAL PURPOSE GROOVER



Capacity—No. 22 Gauge Iron and Lighter

Number	506
Will Groove Work Length.....inches	20
Diameter Smallest Pipe that can be Grooved .....inches	2
Shipped Boxed, Weight, Approximate.....pounds	170
Furnished with $\frac{1}{4}$, $\frac{5}{16}$ and $\frac{3}{8}$ -inch Grooving Rolls and one Flattening Roll.	

HAND CRIMPER



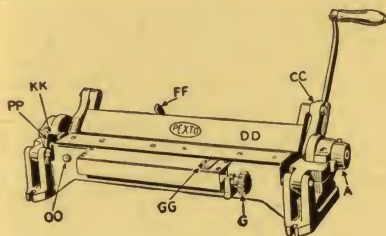
No. 788 COMPANION
HAND PIPE CRIMPER
Capacity—No. 26 Gauge and
Lighter

Weight.....	pounds	1 $\frac{7}{8}$
Length Overall.....	inches	8

A needed companion tool for the mechanic engaged in pipe making or hanging. In the shop, and particularly on outside jobs, no kit is complete without this handy tool. To crimp a piece of pipe with machine-like effect and precision simply slip the end of the pipe to be crimped between the crimping rolls. Close the rolls by pushing down lever. The depth of crimp is regulated through a simple adjustment of the screw.

A tool skillfully designed, well constructed, easy working, simple to operate and the first of its kind ever offered.

SHEET IRON FOLDERS



ARROW BAR FOLDER

Capacity

- $\frac{3}{16}$ " Locks on 22 Gauge Iron
- $\frac{1}{8}$ " Locks on 24 Gauge Iron
- $\frac{3}{32}$ " Locks on XX Tin

Number	62	63
Length for Sheets, Width.....inches	20	30
Will Form Closed and Open Locks.....inches	$\frac{1}{8}$ -1	$\frac{1}{8}$ -1
Will Form Open Locks for Wire up to.....inches	$\frac{1}{4}$	$\frac{1}{4}$
Shipped Boxed Regularly, Weight, Approximate.....pounds	140	220

GENERAL DESCRIPTION

These improved patterns represent the last word in Bar Folder construction. Intended for forming the edges of sheet metal at various angles. They will produce closed locks as well as open or round locks for inserting a wire in the flatsheet.

The designing makes for proper proportionment of the Folding Bar. Where speed and great durability are essential, especially in tinware and other light manufacturing, these patterns will prove superior over any other makes.

Open or round locks for wiring are made by raising the Folding Bar (CC) at right angle. The Wing (DD) is then adjusted for the size of wire to be used through the setting of Wedge (FF) that moves to left and right on Folding Bar. An improvement, consisting of a Pin in the frame, prevents the dropping of the Wing below the Gripping Jaw, the Wing (DD) dropping in a proper position automatically in the process of folding, producing accurate and uniform round locks. This improved adjustment permits for more rapid execution, the blanks sliding more easily between the Gripping Jaw and Folding Plate without obstruction.

Gauge (GG) is adjustable, moved by a screw and is adjusted by turning Gauge Knob (G). The width to which the Gauge is adjusted is indicated on a graduated Brass Plate, and after set is firmly secured through Lock Screw (OO). Gauge is so designed that it cannot twist, insuring accurate lock forming. The life of this gauge is longer than used in any other Folder. The Gauge feature is a Pexto innovation.

Adjustable Stop (A) is provided to permit the forming of any desired angle, in addition to regular Square and Bevel Stops (KK-PP).

A Gripping Jaw clamps the material securely while the bending takes place, guaranteeing the forming of square joints or angles, narrow or wide locks of uniform widths the entire length.

SHEET IRON FOLDERS



IMPROVED
SHEET IRON FOLDER

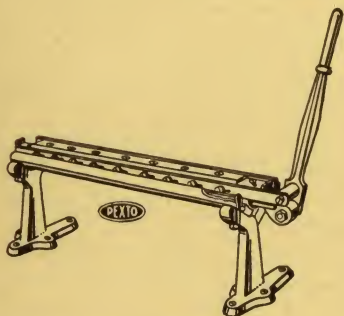
Number	10	15
Capacity Gauge Iron	Number 22	24
Length for Sheets, Width	inches 30	42
Will Form Locks	inches $\frac{1}{4}$ - $\frac{1}{2}$	$\frac{1}{4}$ - $\frac{1}{2}$
Shipped Boxed, Weight, Approximate.....	pounds 85	115



IRON BOTTOM
SHEET IRON FOLDER

No. 2
Capacity—22 Gauge

Length for Sheets, Width	inches 30
Will Form Locks	inches $\frac{3}{16}$ - $\frac{5}{8}$
Shipped Boxed, Weight, Approximate.....	pounds 105

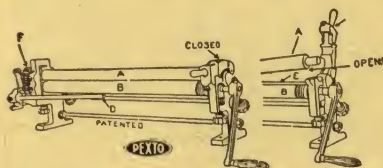


CHAMPION
PIPE FOLDER

No. 11
Capacity—22 Gauge

Length for Sheets, Width	inches 30
Will Form Locks	inches $\frac{3}{16}$ - $\frac{7}{16}$
Shipped Boxed, Weight, Approximate.....	pounds 100

ROLL FORMERS



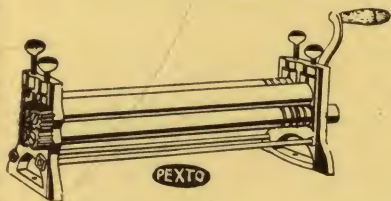
SLIP ROLL FORMERS

Capacity—No. 22 Gauge and Lighter

Number	382	381
Length Rolls for Sheets, Width	inches 30	36
Diameter Rolls	inches 2	2
Shipped Boxed, Weight, Approximate.....	pounds 185	205

In these Formers Gripping Rolls (A) and (B) have an extreme clearance of $\frac{1}{2}$ inch. Grooves cut in rolls are intended to allow work with a wire to be formed.

The Roll Raising Mechanism in these machines is so balanced that the Roll (A) is easily lifted with a slight pressure on the Lever (D). The Latch (C) is released and closed with one movement, and is self-locking.



COMPENSATING GEAR FORMERS Solid Housings

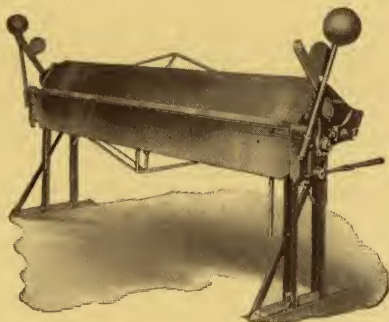
Capacity—No. 22 Gauge and Lighter

Number	373	372
Length Rolls for Sheets, Width	inches 30	36
Diameter Rolls	inches 2	2
Shipped Boxed, Weight, Approximate.....	pounds 140	160

These Formers have Solid Housings and are fitted with machine cut Steel Compensating Gears. Gears to run smoothly should mesh constantly to a certain depth.

Grooves cut in rolls are intended to allow work with a wire to be formed. Wire should only be formed between the grooves cut for that purpose.

CHICAGO STEEL HAND BRAKE



CHICAGO STEEL HAND BRAKE

Capacity—18 Gauge

Length 8'

Weight 1000 lbs.

Incomparable in every particular; choice of the critical and the experienced; they are the world's standard bending brakes. They embody such features as one-man operation, light weight, quick action, wide opening jaws, provision on ends for flanges and bending edge for forming as small as $\frac{1}{4}$ -inch reverse bends. Each end clamps independently.

Bars on bending leaf are removable to allow for forming reverse bends as narrow as $\frac{1}{4}$ -inch.

Adapted for a large variety of work, such as cornice, gutter, square and octagon pipe, skylights, flashing, ridge roll, roofing, ventilating, furnace, auto radiator, fender and body, soda fountains, tanks, corrugated drain boards, etc.

Equipment

All of the above sizes are regularly furnished with $\frac{1}{4}$ -inch detachable steel bar on apron; angle bar for heavy bending; improved adjustable stop gauge for regulating angle of bends; five moulding formers and clamps, and wrenches to fit adjustable parts.

We can also furnish brakes for shipment from mill in 3, 4, 5, 6, 8, 10-foot and 12-foot lengths.

ROOFING TOOLS

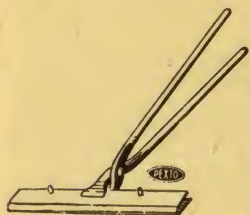
SQUEEZING TONGS

Squeezing Tongs are used on Roll and Cap Roofing and they are also generally used on Pressed Standing Seam Roofing.



Number	766
Weight	pounds 17
Length Squeezing Jaws	inches 11½
Depth Squeezing Jaws	inches 7/8
Length Handles	inches 24

ROOFING TONGS



Number	771	771¼	771½	772
Weight	lbs. 8	9	9½	10½
Will Turn One				
Size Lock	ins. 1	1¼	1½	2
Length Handles	ins. 21	21	21	21
Width Blades	ins. 1½	1¾	2	2½
Length Blades	ins. 18½	18½	18½	18½

COMMON ROOFING FOLDER



Number	13C	33C
Size for Sheets	inches 20	30
Will Form Locks Size	inches 5/16	5/16
Weight	pounds 9	14

IMPROVED ROOFING FOLDER Adjustable Gauge



Number	113	123
Size for Sheets	ins. 20	30
Will Form Locks		
Size	ins. 3/16-3/8	3/16-3/8
Weight	lbs. 10	17

ROOFING SEAMERS



HAND ROOFING DOUBLE SEAMERS

Number	744
Weight per Set.....pounds	16
Sizes.....inches	$\frac{3}{4} \times 1$
Match up with Roofing Tongs ..inches	$1 \times 1\frac{1}{4}$
Shipped in sets of two unless otherwise specified.	

ROOFING DOUBLE SEAMERS

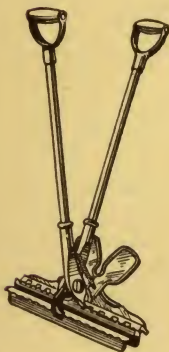
Number	742
Weight per Set of Two Pairs.....pounds	38

These Roofing Double Seamers for Standing Lock will do the work more evenly than by any other process and leave the formed lock of uniform height. They will work well over uneven roof boarding and will double seam hips and ridges with perfect ease.

The first pair of Common-Gauge Seamers finish 1-inch seam single lock, and is numbered 7 on the Outside Bar and 8 on the Center Bar.

The second pair of Common-Gauge Seamers finishes $\frac{3}{4}$ -inch seam, double lock, and is numbered 9 on the Center Bar and 10 on the Outside Bar.

Where Seamers are ordered in half sets, be sure to specify whether the first or second set of Seamers are desired.



Ready for Double Seam
Roofing Edges Turned



First Operation in
Double Seaming



Second
Operation



Third
Operation



Completing
the Seam

ANGLE IRON MACHINES



ANGLE IRON SHEAR No. 4

Capacity—2" x 2" x $\frac{1}{4}$ " Angle Iron

Weight 41 lbs.

It is so designed that it will shear without any clamping and does nice square work.

Light, fast, no changing, always ready to use.

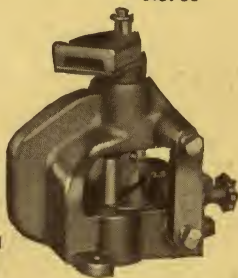
All wearing parts hardened, durable, can't go wrong.

Inserted Tool Steel Blades. Patented eccentric gear gives uniform leverage over entire surface of Shearing Blades. Write for prices.

ANGLE IRON MITRE NOTCHER AND BENDER

No. 50

No. 51



Either Can Be Used Individually

Capacity—Will Shear Mitre in 2" x 2" x $\frac{1}{4}$ " Angle Iron or Smaller

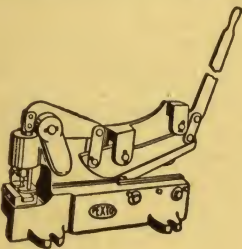
BALL BEARING SPINDLE

The Notcher is built to withstand hard usage, all wearing parts hardened. The angle is held in position by means of a screw clamp, assuring accurate work. The punch enters the die by a special pilot, so that the punch will always travel true with the die, again giving another point of accuracy. Inserted tool steel shearing blade in the punch.

The Bending Attachment is strongly made and is so designed for holding angle iron in proper place for bending by means of a screw clamp against a solid jaw, giving the desired accurate bend.

No changing to be done. Always ready to use. Write for prices.

COMBINED PUNCH AND SHEARS



P. S. & W. CO.

COMBINED SHEAR AND PUNCH

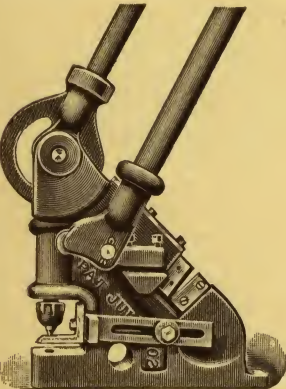
Capacity

Will Punch $\frac{3}{8}$ " Hole in $\frac{3}{16}$ " Steel

Will Cut $\frac{1}{8}$ " Thick Sheet Iron

Will Cut Narrow Bars $\frac{3}{16}$ " and $\frac{1}{4}$ "

Number	679
Depth Punching Gap	inches $2\frac{3}{4}$
Will Center Sheets, Width.	inches $5\frac{1}{2}$
Length Cut.	inches $4\frac{3}{4}$
Shipped Boxed, Weight, Approximate.	pounds 140



LITTLE BLACKSMITH

No. 1 COMBINED PUNCH,

SHEAR AND BENDER

Capacity

Will Punch $\frac{5}{16}$ " Hole in $\frac{1}{4}$ " Steel

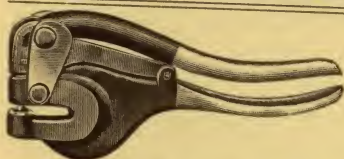
Will Cut $\frac{1}{4}$ " x 2" Bars

Will Bend $\frac{1}{4}$ " x 2" Bars

Length of Lever 26"

Weight 70 lbs.

WHITNEY PUNCHES



No. 5 JUNIOR PUNCH

Capacity— $\frac{1}{4}$ " through 16 Gauge

Weight.....	pounds	2½
Punch in Center of	inches	3
Length Over all	inches	8½
Height of Gap	inches	¼

Tool shipped complete with 3 sets of Punches and Dies, $\frac{1}{8}$ -inch, $\frac{3}{16}$ -inch, $\frac{1}{4}$ -inch.

We also furnish any size Punch and Die from $\frac{1}{16}$ -inch to $\frac{1}{64}$ -inch by $\frac{1}{64}$ -inch.

No. 7 BALL BEARING PUNCH



Capacity— $\frac{1}{4}$ " through $\frac{1}{8}$ "

Weight.....	pounds	6½
Punch in Center of	inches	3½
Length Over all	inches	18
Height of Gap	inches	½

Tool shipped complete with 3 sets of Punches and Dies, $\frac{5}{32}$ -inch, $\frac{7}{32}$ -inch, $\frac{9}{32}$ -inch.

No. 10 BALL BEARING PUNCH



Capacity— $\frac{3}{8}$ " Hole through $\frac{1}{4}$ " Iron

Depth of Throat	inches	1½
Height of Throat.....	inches	⅞
Length Over all	inches	18
Weight, Complete	pounds	8½

Equipped with one Punch and Die of specified size. Can also furnish Base for bench purposes.

Will set rivets as well as punch holes.

WHITNEY PUNCHES



This style Punch and Die used in Nos. 5 and 7 Punches.



This style Punch and Die used in Nos. 10, 20 and 40 Punches.

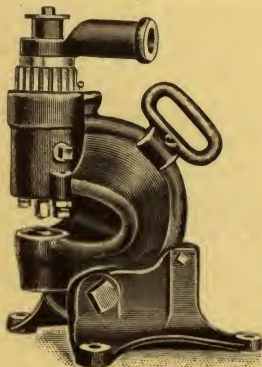
When using Punches and Dies use a few drops of oil. It will punch easier and Punches will last longer.



No. 20 BALL BEARING PUNCH
Capacity— $\frac{1}{2}$ " Hole through $\frac{1}{2}$ " Iron
 Depth of Throatinches 2
 Height of Throat.....inches $1\frac{3}{8}$
 Weight, Completepounds 20
 Shipped with one Punch and Die of specified size.

Punches and Dies regular stock, $\frac{1}{4}$ " by $\frac{1}{16}$ " to $\frac{9}{16}$ ".

This tool is made of Alloy Steel and Heat Treated throughout. It will not only Punch holes but RIVET as well.



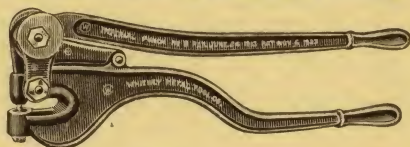
No. 40 BALL BEARING PUNCH
Equipped with a Ratchet Head and Socket Handle

Capacity— $\frac{5}{8}$ " through $\frac{5}{8}$ " Iron
 Depth of Throat.....inches 3
 Height of Throatinches 2
 Weight, Completepounds 87

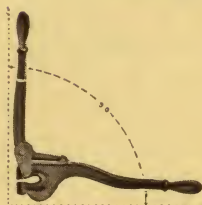
Equipped with one Punch and Die of specified size. Will rivet as well as punch holes. Drop forged, heat treated throughout. Don't compare this with the ordinary screw punch. It's different; much faster. Can be furnished with or without base.

PUNCHES

No. 8 ROLLER BEARING PUNCH



Capacity— $\frac{1}{4}$ " Hole through $\frac{1}{4}$ " Iron



Showing how punch will work inside of 90°.

Just right for Standing Seams or Skylight work.

Depth of Throat	inches	$2\frac{1}{8}$
Punch in Center	inches	$4\frac{1}{4}$
Height of Gap	inches	$\frac{3}{8}$
Weight.....	pounds	16
Length Overall.....	inches	$21\frac{1}{2}$

No. 2 WHITNEY HAND PUNCH

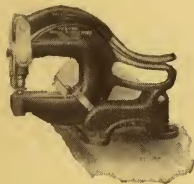


Capacity— $\frac{5}{16}$ " Hole through $\frac{1}{4}$ " Iron

Depth of Throat	inches	$1\frac{11}{16}$
Length.....	inches	23
Weight.....	pounds	13

Punches from $\frac{1}{8}$ " to $\frac{1}{2}$ " by $\frac{1}{32}$ ".

PUNCHES



No. X. X.

HYRO METAL PUNCH

Capacity

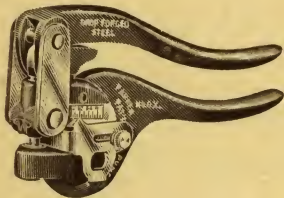
$\frac{1}{2}$ " Hole in No. 20 Gauge Steel
Length 9" Weight $4\frac{1}{2}$ lbs.

Holes can be punched in center of 7-inch circle.

This Punch can be used in the shop or out on the job—take the work to the Punch or the Punch to the work. A pull of a pin releases the Punch from the stand. Because it has an exceptionally wide throat, the No. XX accommodates a larger variety of work than can be done on any other Punch. Especially suitable for work having rolled or formed edges.

Equipped with gauge and automatic stripper, both of which are adjustable and easily removed.

Punches and Dies easily and quickly changed.



No. O. X.

HYRO METAL PUNCH

Capacity

$\frac{17}{64}$ " Hole in No. 16 Gauge Steel
Length 8" Weight $2\frac{5}{8}$ lbs.

Front Pointer and Side Gauge combination enables you to punch holes exactly where you want them. You don't have to look into the throat to locate the place where the hole is wanted. Saves time. Does away with center-punching.

Punches and Dies made in the following sizes: $\frac{1}{8}$ ", $\frac{5}{32}$ ", $\frac{3}{16}$ ", $\frac{7}{32}$ ", $\frac{1}{4}$ " and $\frac{17}{64}$ ".

SHEARS



MARSHALLTOWN THROATLESS SHEAR

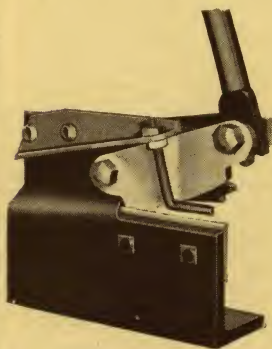
No. 18

Capacity—No. 18 Gauge Steel

No adjustment required for cutting any thickness up to capacity.

Will cut in and out curves to $1\frac{3}{4}$ inch radius. No limit to size of sheet.

Work is finished as it leaves the machine. No buckling or stretching material.



CHICAGO STEEL SLITTING SHEAR

Capacity— $\frac{3}{16}$ " x 2" Bars

No. 10 Gauge Sheets

Weight 22 Pounds

EASIEST OPERATED AND MOST DURABLE HAND BENCH SHEAR ON THE MARKET

Indispensable for slitting sheet steel and for cutting steel bars, hand iron, brake band lining, belting, etc.

Pressed Steel Construction. Shear blades made of highest grade crucible steel. Equipped with adjustable hold-down. All parts interchangeable.

MAPLEWOOD ROTARY SLITTING SHEAR

Used in Connection with a Cornice Brake



The Cutter



The Track

This Shear is based on the principle of the Rotary Slitting and Circle Shear. The top cutter overlaps the bottom. The Cutting Wheels are not geared to a handle and ride free.

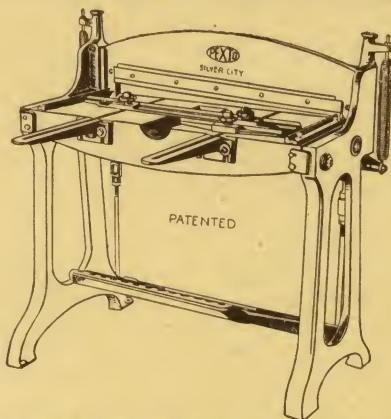
The Shear rides in a slotted track which is attached to the brake by drilling five holes in the back of the track to line up with holes in front leaf of the brake. No special bolts are required, the regular clamp pins furnished with your brake being used to clamp the track in position.

To operate the shear you merely place the iron in your brake, with cutting mark on sheet in line with shear wheels, clamp the work, and pull the handle on the cutter to the other end of the brake. Speed of cutting depends on how fast you walk from one end of the brake to the other. The track guides the cutter which cuts iron straight enough for use on a gutter beader, for skylight bars, etc.

Using one hand, the operator can easily cut 24 gauge iron with this shear many times faster than slitting with hand snips, and the cutter makes a clean, burrless cut.

When marking your sheets for bends, prick the sheet for the cutting point, and when making a pitched gutter, mark both ends of the sheet. When a quantity of strips are to be cut make a stop gauge of strap iron and attach it to the brake.

SQUARING SHEARS

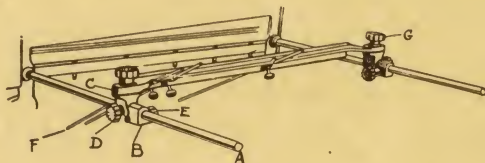


Capacity—No. 18 Gauge Iron and Lighter

Number	132	137
Length for Sheets, Width.....inches	30	36
Length Long Front Arms.....inches	19	25¼
Length Rear Gauge Arms	30	30
Width of Bed	14	14
Shipped Regularly on Skids, Weight, Approximate.....pounds	510	600

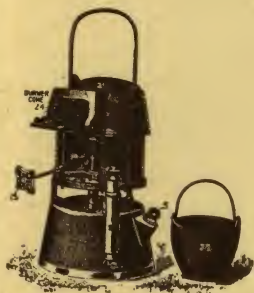
Machines for 22-inch, 42-inch and 52-inch sheets furnished from mill. Side tables can be furnished for above at extra cost.

REGULAR REAR GAUGE EQUIPMENT



"A" are steel supporting rods on which the gauge holders "B" slide. "C" is the rear gauge held to its holders with large knob screws. Gauge holder is released and securely tightened by means of large knob screw "D". Micrometer adjustments are made through turning knob "E". The gauge holder "B" moves easily with a slight turn of knob "E", the movement secured through a hardened knurled roll in the gauge holder "B". Rods "F" are adjustable—intended to lead light sheets to square surface of gauge "C". Nothing to get out of order or stick—A PATENTED FEATURE APPLIED TO PEXTO SQUARING SHEARS ONLY.

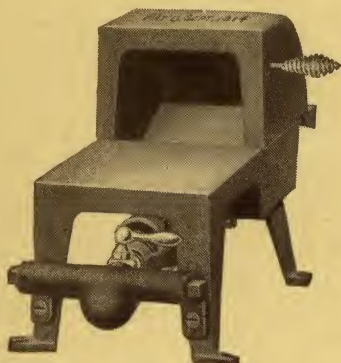
GASOLINE FURNACE



**No. 196 RELIABLE
Gasoline Furnace with
Melting Pot
Capacity of Tank 2 qts.
Extreme Height (Bail Up) 19''
Height (Bail Down) 14''
Diameter of Tank 9''
Diameter of Melting Pot 5''
Height of Melting Pot 4''
Net Weight, Furnace only
(less Pot) 16 lbs.
Shipping Weight, Furnace with
Pot (boxed) 30 lbs.**

The "Reliable" Furnace is equipped with a powerful burner which permits of its doing the same work in one-half the time of any other furnace. It is simple in construction, easy to operate, light in weight, equally well adapted for both inside and outside work, and will outlast any other make of furnace.

JOHNSON GAS FURNACES



No. 501
SOLDERING FURNACE
Length 12"
Weight 15 lbs.
Firepot Opening $3\frac{1}{2}'' \times 2\frac{1}{2}''$
Gas Consumption—
10 cu. ft. per hour

This Furnace is designed to heat a pair of 6-pound soldering coppers. It is equipped with one Johnson Atmospheric Bunsen Burner with shut-off valve and Pilot Light. The base is lined with fire brick and the shelf in the rear protects the tinning on the points of the coppers and the patented curved shaped hood forces a return blast over the top of irons or parts to be heated.

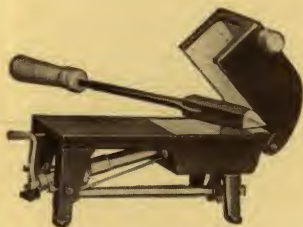


No. 502
SOLDERING FURNACE
Length 14"
Weight 18 lbs.
Firepot Opening $4\frac{1}{2}'' \times 3''$
Gas Consumption—
10 cu. ft. per hour to Burner

This Furnace is exactly like the Series B No. 501, only larger, having two independent burners with shut-off valves and pilots.

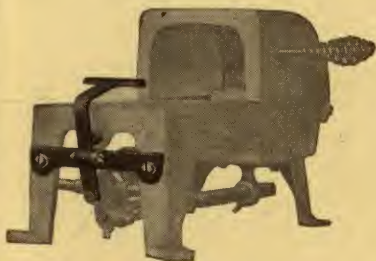
Designed to heat a pair of 10 to 12-pound soldering coppers.

JOHNSON GAS FURNACES



No. 1
SOLDERING FURNACE
Length 12"
Weight 12 lbs.
Firepot Opening $3\frac{1}{2}'' \times 2\frac{1}{2}''$
Gas Consumption—
10 cu. ft. an hour

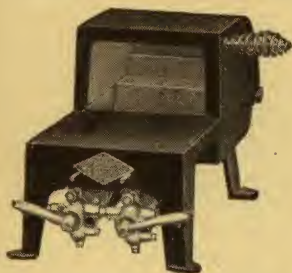
Equipped with one powerful Johnson Atmospheric Bunsen Burner with shut-off valve and Pilot Light. Fire box is lined with a refractory lining. This Furnace will handle a pair of 6-pound soldering coppers and can also be used for the heat treating of any carbon steel tools up to its capacity. The patented curved shaped hood forces a return blast over the tops of irons or parts to be heated.



No. 21
AUTOMATIC
SOLDERING
FURNACE

This is the same as the No. 1 Furnace, but it is fitted with an automatic valve. The handle of the soldering copper pressing down on the lever, automatically turns on and off the gas. Will handle a pair of 6-pound soldering coppers.

JOHNSON GAS FURNACES



No. 101
BENCH FURNACE

Length 14"

Weight 18 lbs.

Firepot Opening $4\frac{1}{2}'' \times 2\frac{3}{4}''$

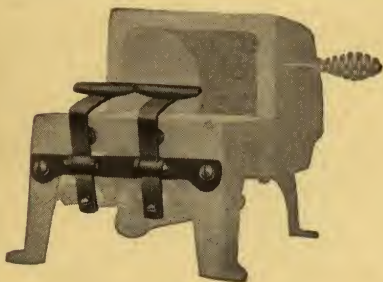
Size of Fire Box—

$3\frac{3}{4}'' \times 4\frac{1}{2}'' \times 5\frac{1}{2}''$

Gas Consumption—

10 cu. ft. per hour to Burner

Equipped with two powerful Johnson Atmospheric Bunsen Burners with shut-off valves and Pilot Lights. Fire box lined with a refractory lining. This Furnace will handle a pair of 10 to 12-pound soldering coppers. Can also be used for the heat treating of any carbon steel tools up to its capacity. These Furnaces have the Johnson Patented curved shaped hood that forces a return blast over the tops of the irons or part to be heated.



No. 111

AUTOMATIC

SOLDERING

FURNACE

This is the same as the No. 101 Furnace but it is fitted with automatic valves. The handles of the soldering coppers pressing down on the levers, automatically turns on and off the gas.

Designed to handle a pair of 10 to 12-pound soldering coppers.

RELATIVE THICKNESS OF DIFFERENT SHEET METALS

COMPARISON OF GAUGES — (Approximate)

Decimal	Fraction of Inches	U. S. STANDARD BLACK STEEL WEIGHTS				BROWN & SHARPE				BIRMINGHAM OR STUBBS				ZINC				TIN PLATE			
		Dec-imal		Pounds Sq. Ft.		Nickel Silver		Aluminum		Copper		Pounds Sq. Ft.		Dec-imal		Pounds Sq. Ft.		Ga.		Dec-imal	
.250	1/4	3	.250	10	3.588	2	.257	11.027	3.588	3	.259	12 lb.	25	.250	9.40						
.2187	7/32	5	.219	8.75	3.195	3	.229	9.819	3.195	5	.220	10 lb.									
.2031	13/64	6	.203	8.125	2.845	4	.204	8.745	2.845	6	.203	9 lb.									
.1875	3/16	7	.187	7.50	2.534	5	.182	7.788	2.534	7	.180	8 lb.									
.1718	11/64	8	.172	6.88	2.256	6	.162	6.935	2.256	8	.165	7 lb.									
.1562	5/32	9	.156	6.25	2.009	7	.144	6.175	2.009	9	.148										
.1406	9/64	10	.140	5.625	1.798	8	.128	5.499	1.798	10	.134	6 lb.									
.125	1/8	11	.125	5	1.594	9	.114	4.898	1.594	11	.120		24	.125	4.70						
.1093	7/64	12	.109	4.375	1.418	10	.102	4.361	1.418	12	.109	5 lb.									
.0937	3/32	13	.094	3.75	1.264	11	.091	3.884	1.264	13	.095	4 lb.									
.0781	5/64	14	.078	3.125	1.126	12	.081	3.457	1.126	14	.083										
.0625	1/16	15	.070	2.81	1.002	13	.072	3.080	1.002	15	.072	3 lb.	20	.070	2.62	23 X	.066				
		16	.063	2.50	.892	14	.064	2.743	.892	16	.065	2 1/2 lb.	19	.060	2.25	21 X	.061				
		17	.056	2.25	.795	15	.057	2.442	.795	17	.058		18	.055	2.06	19 X	.057				
.0468	3/64	18	.050	2.00	.708	16	.051	2.175	.708	18	.049	2 lb.	17	.050	1.87	17 X	.050				
		19	.044	1.75	.630	17	.045	1.937	.630	19	.042		16	.045	1.68	15 X	.045				
		20	.038	1.50	.561	18	.040	1.725	.561	20	.035		15	.040	1.50	11 X	.038				
.0312	1/32	21	.034	1.38	.500	19	.035	1.536	.500	21	.032	24 oz.	14	.036	1.35	9 X	.034				
		22	.031	1.25	.445	20	.032	1.367	.445	22	.028	22 oz.	13	.032	1.20	8 X	.032				
		23	.028	1.13	.396	21	.028	1.218	.396	23	.025	18 oz.	12	.028	1.05	6 X	.028				
		24	.025	1.00	.353	22	.025	1.085	.353	24	.022	16 oz.	11	.024	.90	5 X	.025				
		25	.022	.88	.314	23	.023	.966	.314	25	.020	14 oz.	10	.020	.75	4 X	.022				
		26	.019	.75	.280	24	.020	.860	.280	26	.018	12 oz.	9	.018	.67	2 X	.018				
.0156	1/64	27	.017	.69	.250	25	.018	.766	.250	27	.016	10 oz.	8	.016	.60	1 X	.016				
		28	.016	.63	.222	26	.016	.682	.222	28	.014		7	.014	.52	1 X L	.015				
		29	.014	.56	.197	27	.014	.608	.197	29	.013		6	.012	.45	1 C	.013				
		30	.013	.50	.176	28	.013	.541	.176	30	.010	8 oz.	5	.010	.37		.010				
		31	.011	.44	.157	29	.011	.482	.157	31	.009	6 oz.	4	.008	.30		.008				
		32	.010	.41	.140	30	.010	.429	.140	32	.008		3	.006	.22		.006				
		33	.009	.34	.124	31	.009	.382	.124	33	.007										
		34	.008	.31	.111	32	.008	.340	.111	34	.007										
		35	.007	.28	.098	33	.007	.303	.098	35	.006										
		36	.007	.25	.088	34	.006	.269	.088												
		37	.008	.25		35															

GALVANIZED SHEET GAUGE

Number of Gauge U. S. S.	Weight per Square Foot in Pounds	Weight per Square Foot in Ounces
8	7.031	112.5
9	6.406	102.5
10	5.781	92.5
11	5.156	82.5
12	4.531	72.5
13	3.906	62.5
14	3.281	52.5
15	2.969	47.5
16	2.656	42.5
17	2.406	38.5
18	2.156	34.5
19	1.906	30.5
20	1.656	26.5
21	1.531	24.5
22	1.406	22.5
23	1.281	20.5
24	1.156	18.5
25	1.031	16.5
26	.906	14.5
27	.844	13.5
28	.781	12.5
29	.719	11.5
30	.656	10.5
31	.594	9.5
32	.563	9.0
33	.531	8.5
34	.500	8.0

DECIMAL EQUIVALENTS

$\frac{1}{64}$.0156	$\frac{17}{64}$.2656	$\frac{33}{64}$.5156	$\frac{49}{64}$.7656
$\frac{1}{32}$.0312	$\frac{9}{32}$.2812	$\frac{17}{32}$.5312	$\frac{25}{32}$.7812
$\frac{3}{64}$.0468	$\frac{19}{64}$.2968	$\frac{35}{64}$.5468	$\frac{51}{64}$.7968
$\frac{1}{16}$.0625	$\frac{5}{16}$.3125	$\frac{9}{16}$.5625	$\frac{13}{16}$.8125
$\frac{5}{64}$.0781	$\frac{21}{64}$.3281	$\frac{37}{64}$.5781	$\frac{53}{64}$.8281
$\frac{3}{32}$.0937	$\frac{11}{32}$.3437	$\frac{19}{32}$.5937	$\frac{27}{32}$.8437
$\frac{7}{64}$.1093	$\frac{23}{64}$.3593	$\frac{39}{64}$.6093	$\frac{55}{64}$.8593
$\frac{1}{8}$.125	$\frac{3}{8}$.375	$\frac{5}{8}$.625	$\frac{7}{8}$.875
$\frac{9}{64}$.1406	$\frac{25}{64}$.3906	$\frac{41}{64}$.6406	$\frac{57}{64}$.8906
$\frac{5}{32}$.1562	$\frac{13}{32}$.4062	$\frac{21}{32}$.6562	$\frac{29}{32}$.9062
$\frac{11}{64}$.1718	$\frac{27}{64}$.4218	$\frac{43}{64}$.6718	$\frac{59}{64}$.9218
$\frac{3}{16}$.1875	$\frac{7}{16}$.4375	$\frac{11}{16}$.6875	$\frac{15}{16}$.9375
$\frac{13}{64}$.2031	$\frac{29}{64}$.4531	$\frac{45}{64}$.7031	$\frac{61}{64}$.9531
$\frac{7}{32}$.2187	$\frac{15}{32}$.4687	$\frac{23}{32}$.7187	$\frac{31}{32}$.9687
$\frac{15}{64}$.2343	$\frac{31}{64}$.4843	$\frac{47}{64}$.7343	$\frac{63}{64}$.9843
$\frac{1}{4}$.25	$\frac{1}{2}$.5	$\frac{3}{4}$.75	1 1.0

INCHES EXPRESSED AS DECIMAL PARTS OF A FOOT

$\frac{1}{8}$ "	=	.0104	$\frac{61}{8}$ "	=	.5104
$\frac{1}{4}$ "	=	.0208	$\frac{61}{4}$ "	=	.5208
$\frac{3}{8}$ "	=	.0312	$\frac{63}{8}$ "	=	.5312
$\frac{1}{2}$ "	=	.0416	$\frac{61}{2}$ "	=	.5416
$\frac{5}{8}$ "	=	.0521	$\frac{65}{8}$ "	=	.5520
$\frac{3}{4}$ "	=	.0625	$\frac{63}{4}$ "	=	.5625
$\frac{7}{8}$ "	=	.0729	$\frac{67}{8}$ "	=	.5729
1	=	.0833	7	=	.5833
$1\frac{1}{8}$ "	=	.0937	$7\frac{1}{8}$ "	=	.5937
$1\frac{1}{4}$ "	=	.1041	$7\frac{1}{4}$ "	=	.6041
$1\frac{3}{8}$ "	=	.1145	$7\frac{3}{8}$ "	=	.6145
$1\frac{1}{2}$ "	=	.1250	$7\frac{1}{2}$ "	=	.6250
$1\frac{5}{8}$ "	=	.1354	$7\frac{5}{8}$ "	=	.6354
$1\frac{3}{4}$ "	=	.1458	$7\frac{3}{4}$ "	=	.6458
$1\frac{7}{8}$ "	=	.1563	$7\frac{7}{8}$ "	=	.6563
2	=	.1666	8	=	.6666
$2\frac{1}{8}$ "	=	.1771	$8\frac{1}{8}$ "	=	.6770
$2\frac{1}{4}$ "	=	.1875	$8\frac{1}{4}$ "	=	.6875
$2\frac{3}{8}$ "	=	.1979	$8\frac{3}{8}$ "	=	.6979
$2\frac{1}{2}$ "	=	.2083	$8\frac{1}{2}$ "	=	.7083
$2\frac{5}{8}$ "	=	.2187	$8\frac{5}{8}$ "	=	.7187
$2\frac{3}{4}$ "	=	.2291	$8\frac{3}{4}$ "	=	.7291
$2\frac{7}{8}$ "	=	.2395	$8\frac{7}{8}$ "	=	.7395
3	=	.2500	9	=	.7500
$3\frac{1}{8}$ "	=	.2604	$9\frac{1}{8}$ "	=	.7604
$3\frac{1}{4}$ "	=	.2708	$9\frac{1}{4}$ "	=	.7708
$3\frac{3}{8}$ "	=	.2812	$9\frac{3}{8}$ "	=	.7812
$3\frac{1}{2}$ "	=	.2916	$9\frac{1}{2}$ "	=	.7916
$3\frac{5}{8}$ "	=	.3020	$9\frac{5}{8}$ "	=	.8021
$3\frac{3}{4}$ "	=	.3125	$9\frac{3}{4}$ "	=	.8125
$3\frac{7}{8}$ "	=	.3229	$9\frac{7}{8}$ "	=	.8229
4	=	.3333	10	=	.8333
$4\frac{1}{8}$ "	=	.3437	$10\frac{1}{8}$ "	=	.8437
$4\frac{1}{4}$ "	=	.3541	$10\frac{1}{4}$ "	=	.8541
$4\frac{3}{8}$ "	=	.3645	$10\frac{3}{8}$ "	=	.8645
$4\frac{1}{2}$ "	=	.3750	$10\frac{1}{2}$ "	=	.8750
$4\frac{5}{8}$ "	=	.3854	$10\frac{5}{8}$ "	=	.8854
$4\frac{3}{4}$ "	=	.3958	$10\frac{3}{4}$ "	=	.8958
$4\frac{7}{8}$ "	=	.4062	$10\frac{7}{8}$ "	=	.9062
5	=	.4166	11	=	.9166
$5\frac{1}{8}$ "	=	.4271	$11\frac{1}{8}$ "	=	.9270
$5\frac{1}{4}$ "	=	.4375	$11\frac{1}{4}$ "	=	.9375
$5\frac{3}{8}$ "	=	.4479	$11\frac{3}{8}$ "	=	.9479
$5\frac{1}{2}$ "	=	.4583	$11\frac{1}{2}$ "	=	.9583
$5\frac{5}{8}$ "	=	.4687	$11\frac{5}{8}$ "	=	.9687
$5\frac{3}{4}$ "	=	.4791	$11\frac{3}{4}$ "	=	.9791
$5\frac{7}{8}$ "	=	.4895	$11\frac{7}{8}$ "	=	.9895
6	=	.5000	12	=	1.0000

TIN AND SHEET IRON WORKER'S CIRCUMFERENCE TABLE

TO INCREASE A GIVEN DIAMETER

For 1-8 inch, add to its circumference 3-8 and 1-64.

For 1-4 inch, add to its circumference 3-4 and 1-32.

For 1-2 inch, add to its circumference 1 1-2 and 1-16.

For 1 inch, add to its circumference 3 1-8.

The following measures do not allow for seams, which are different on Sheet Iron

Diam.	Cir.	Area	Diam.	Cir.	Area
$\frac{1}{2}$	$1\frac{9}{16}$	.196	8	$25\frac{1}{8}$	50.265
$\frac{5}{8}$	$1\frac{15}{16}$	.306	$\frac{1}{4}$	$25\frac{7}{8}$	53.456
$\frac{3}{4}$	$2\frac{1}{32}$	.441	$\frac{1}{2}$	$26\frac{3}{4}$	56.745
$\frac{7}{8}$	$2\frac{3}{4}$	.601	$\frac{3}{4}$	$27\frac{1}{2}$	60.132
1	$3\frac{1}{8}$	.785	9	$28\frac{1}{4}$	63.617
$\frac{1}{4}$	$3\frac{7}{8}$	1.227	$\frac{1}{4}$	29	67.200
$\frac{1}{2}$	$4\frac{3}{4}$	1.767	$\frac{1}{2}$	$29\frac{7}{8}$	70.882
$\frac{3}{4}$	$5\frac{1}{2}$	2.405	$\frac{3}{4}$	$30\frac{5}{8}$	74.662
2	$6\frac{1}{4}$	3.141	10	$31\frac{3}{8}$	78.540
$\frac{1}{4}$	$7\frac{1}{8}$	3.976	$\frac{1}{4}$	$32\frac{1}{4}$	82.516
$\frac{1}{2}$	$7\frac{7}{8}$	4.908	$\frac{1}{2}$	33	86.590
$\frac{3}{4}$	$8\frac{5}{8}$	5.939	$\frac{3}{4}$	$33\frac{3}{4}$	90.762
3	$9\frac{3}{8}$	7.068	11	$34\frac{1}{2}$	95.033
$\frac{1}{4}$	$10\frac{1}{4}$	8.295	$\frac{1}{4}$	$35\frac{3}{8}$	99.402
$\frac{1}{2}$	11	9.621	$\frac{1}{2}$	$36\frac{1}{8}$	103.869
$\frac{3}{4}$	$11\frac{3}{4}$	11.045	$\frac{3}{4}$	$36\frac{7}{8}$	108.434
4	$12\frac{1}{2}$	12.566	12	$37\frac{3}{4}$	113.098
$\frac{1}{4}$	$13\frac{3}{8}$	14.186	$\frac{1}{4}$	$38\frac{1}{2}$	117.859
$\frac{1}{2}$	$14\frac{1}{8}$	15.904	$\frac{1}{2}$	$39\frac{1}{4}$	122.718
$\frac{3}{4}$	$14\frac{7}{8}$	17.720	$\frac{3}{4}$	40	127.676
5	$15\frac{3}{4}$	19.635	13	$40\frac{7}{8}$	132.733
$\frac{1}{4}$	$16\frac{1}{2}$	21.647	$\frac{1}{4}$	$41\frac{5}{8}$	137.886
$\frac{1}{2}$	$17\frac{1}{4}$	23.758	$\frac{1}{2}$	$42\frac{3}{8}$	143.139
$\frac{3}{4}$	$18\frac{1}{8}$	25.967	$\frac{3}{4}$	$43\frac{1}{4}$	148.489
6	$18\frac{7}{8}$	28.274	14	44	153.938
$\frac{1}{4}$	$19\frac{5}{8}$	30.679	$\frac{1}{4}$	$44\frac{3}{4}$	159.485
$\frac{1}{2}$	$20\frac{3}{8}$	33.183	$\frac{1}{2}$	$45\frac{1}{2}$	165.130
$\frac{3}{4}$	$21\frac{1}{4}$	35.784	$\frac{3}{4}$	$46\frac{3}{8}$	170.873
7	22	38.484	15	$47\frac{1}{8}$	176.715
$\frac{1}{4}$	$22\frac{3}{4}$	41.281	$\frac{1}{4}$	$47\frac{7}{8}$	182.654
$\frac{1}{2}$	$23\frac{1}{2}$	44.178	$\frac{1}{2}$	$48\frac{3}{4}$	188.692
$\frac{3}{4}$	$24\frac{3}{8}$	47.173	$\frac{3}{4}$	$49\frac{1}{2}$	194.828

For Common English Sheet Iron, Nos. 25 and 26, the above table will apply as it is; but for every fourth number heavier add one-eighth inch to above measure.

TIN AND SHEET IRON WORKER'S CIRCUMFERENCE TABLE

Diam.	Cir.	Area	Diam.	Cir.	Area
16	50 $\frac{1}{4}$	201.062	29	91 $\frac{1}{8}$	660.521
$\frac{1}{4}$	51	207.390	$\frac{1}{2}$	92 $\frac{5}{8}$	683.494
$\frac{1}{2}$	51 $\frac{7}{8}$	213.825	30	94 $\frac{1}{4}$	706.860
$\frac{3}{4}$	52 $\frac{5}{8}$	220.353	$\frac{1}{2}$	95 $\frac{7}{8}$	730.618
17	53 $\frac{3}{8}$	226.981	31	97 $\frac{3}{8}$	754.769
$\frac{1}{4}$	54 $\frac{1}{4}$	233.705	$\frac{1}{2}$	99	779.313
$\frac{1}{2}$	55	240.528	32	100 $\frac{1}{2}$	804.250
$\frac{3}{4}$	55 $\frac{3}{4}$	247.450	$\frac{1}{2}$	102 $\frac{1}{8}$	829.578
18	56 $\frac{1}{2}$	254.467	33	103 $\frac{5}{8}$	855.301
$\frac{1}{4}$	57 $\frac{3}{8}$	261.587	$\frac{1}{2}$	105 $\frac{1}{4}$	881.415
$\frac{1}{2}$	58 $\frac{1}{8}$	268.803	34	106 $\frac{7}{8}$	907.922
$\frac{3}{4}$	58 $\frac{7}{8}$	276.117	$\frac{1}{2}$	108 $\frac{3}{8}$	934.822
19	59 $\frac{3}{4}$	283.529	35	110	962.115
$\frac{1}{4}$	60 $\frac{1}{2}$	291.039	$\frac{1}{2}$	111 $\frac{1}{2}$	989.800
$\frac{1}{2}$	61 $\frac{1}{4}$	298.648	36	113 $\frac{1}{8}$	1017.878
$\frac{3}{4}$	62	306.355	$\frac{1}{2}$	114 $\frac{5}{8}$	1046.349
20	62 $\frac{7}{8}$	314.160	37	116 $\frac{1}{4}$	1075.213
$\frac{1}{4}$	63 $\frac{5}{8}$	322.063	$\frac{1}{2}$	117 $\frac{3}{4}$	1104.498
$\frac{1}{2}$	64 $\frac{3}{8}$	330.064	38	119 $\frac{3}{8}$	1134.118
$\frac{3}{4}$	65 $\frac{1}{8}$	338.163	$\frac{1}{2}$	121	1164.159
21	66	346.361	39	122 $\frac{1}{2}$	1194.593
$\frac{1}{4}$	66 $\frac{3}{4}$	354.657	$\frac{1}{2}$	124 $\frac{1}{8}$	1225.420
$\frac{1}{2}$	67 $\frac{1}{2}$	363.051	40	125 $\frac{5}{8}$	1256.640
$\frac{3}{4}$	68 $\frac{3}{8}$	371.543	$\frac{1}{2}$	127 $\frac{1}{4}$	1288.250
22	69 $\frac{1}{8}$	380.134	41	128 $\frac{3}{4}$	1320.260
$\frac{1}{4}$	69 $\frac{7}{8}$	388.822	$\frac{1}{2}$	130 $\frac{3}{8}$	1352.650
$\frac{1}{2}$	70 $\frac{5}{8}$	397.608	42	132	1385.440
$\frac{3}{4}$	71 $\frac{1}{2}$	406.495	$\frac{1}{2}$	133 $\frac{1}{2}$	1418.630
23	72 $\frac{1}{4}$	415.477	43	135 $\frac{1}{8}$	1452.210
$\frac{1}{4}$	73	424.557	$\frac{1}{2}$	136 $\frac{5}{8}$	1486.170
$\frac{1}{2}$	73 $\frac{7}{8}$	433.740	44	138 $\frac{1}{4}$	1520.530
$\frac{3}{4}$	74 $\frac{5}{8}$	443.014	$\frac{1}{2}$	139 $\frac{3}{4}$	1555.280
24	75 $\frac{3}{8}$	452.390	45	141 $\frac{3}{8}$	1590.430
$\frac{1}{2}$	77	471.436	$\frac{1}{2}$	143	1625.970
25	78 $\frac{1}{2}$	490.875	46	144 $\frac{1}{2}$	1661.910
$\frac{1}{2}$	80 $\frac{1}{8}$	510.706	$\frac{1}{2}$	146 $\frac{1}{8}$	1698.230
26	81 $\frac{5}{8}$	530.930	47	147 $\frac{5}{8}$	1734.950
$\frac{1}{2}$	83 $\frac{1}{4}$	551.547	$\frac{1}{2}$	149 $\frac{1}{4}$	1772.050
27	84 $\frac{7}{8}$	572.557	48	150 $\frac{3}{4}$	1809.560
$\frac{1}{2}$	86 $\frac{3}{8}$	593.958			
28	88	615.754			
$\frac{1}{2}$	89 $\frac{1}{2}$	637.941			

For Common English Sheet Iron, Nos. 25 and 26, the above table will apply as it is; but for every fourth number heavier add one-eighth inch to above measure.

WEIGHT OF SHEET GALVANIZED PIPE

Dia. of Pipe In.	WEIGHT OF PIPE PER RUNNING FOOT								Area Square Inches	Circum- ference Inches
	No. 28 Gauge	No. 26 Gauge	No. 24 Gauge	No. 23 Gauge	No. 22 Gauge	No. 20 Gauge	No. 18 Gauge	No. 16 Gauge		
4	1	1 1/8	1 1/4	1 1/2	1 3/4	2 1/8	2 5/8	3 1/4	12.57	12.56
5	1 1/4	1 3/8	1 5/8	1 3/4	2 1/8	2 5/8	3 1/4	3 7/8	19.64	15.70
6	1 1/2	1 5/8	1 7/8	2 1/8	2 5/8	3 1/8	3 3/4	4 3/4	28.27	18.84
7	1 5/8	1 7/8	2 1/8	2 1/2	3	3 1/2	4 3/8	5 3/8	38.49	22.00
8	1 7/8	2 1/8	2 1/2	2 3/4	3 3/8	4	5	6 1/8	50.27	25.13
9	2 1/8	2 3/8	2 3/4	3 1/8	3 1/4	4 1/2	5 1/2	6 7/8	63.62	28.27
10	2 3/8	2 5/8	3	3 3/8	4 1/8	5	6 1/4	7 5/8	78.54	31.41
11	2 1/2	3	3 3/8	3 3/4	4 1/2	5 1/2	6 3/4	8 3/8	95.03	34.55
12	2 5/8	3 1/4	3 5/8	4	5	6	7 1/4	9	113.10	37.70
13		3 1/2	3 7/8	4 3/8	5 1/4	6 1/2	7 7/8	9 3/4	132.73	40.84
14		3 3/4	4 1/4	4 3/4	5 3/4	7	8 1/2	10 1/2	153.94	44.00
15		4	4 1/2	5	6 1/4	7 1/2	9 1/8	11 1/4	176.72	47.12
16		4 1/4	4 3/4	5 3/8	6 5/8	8	9 5/8	12	201.06	50.28
17		4 1/2	5	5 3/4	7	8 1/2	10 1/4	12 3/4	226.98	53.41
18		4 3/4	5 3/8	6	7 3/8	9	10 7/8	13 1/2	254.47	55.54
20			6	6 3/4	8 1/4	10	12 1/8	15	314.16	62.83
22			6 1/2	7 1/2	9	11	13 3/8	16 1/2	380.13	69.11
24			7 1/8	8	9 7/8	12	14 1/2	18	452.39	75.39
26					10 3/4	14	15 5/8	19 1/2	530.93	81.68
28					11 5/8	14 1/2	17	21	615.75	87.96
30					12 1/2	15	18 1/4	22 5/8	706.86	94.24
32					13 1/4	16	19 1/2	24	804.25	100.53
34					14	17	20 3/4	25 1/2	907.92	106.81
36					14 3/4	18	22	27	1017.88	113.00
38					15 1/2	19	23	28 1/2	1134.12	119.38
40					16 1/2	20	24 1/4	30	1256.64	125.66
42						21	25 1/2	31 1/2	1385.45	131.94
44						22	26 1/2	33	1520.53	138.25
46						23	28	34 1/2	1661.91	144.51
48						24	29	36	1809.56	150.79
50						25	30	37 1/2	1963.50	157.08
52						26	31 1/2	39	2123.72	163.36
54						27	33	40 1/2	2290.23	169.24
56						28	34	42	2463.01	175.93
58						29	35	43 1/2	2642.09	182.21
60						30	36 1/2	45	2827.74	188.49

Due allowance has been made for laps, rivets and solder

BACKSET OF ELBOWS

Size of Elbows	In Inches									
	Without allowance for laps									
	NUMBER OF PIECES									
Inches	2	3	4	5	HARRY L DOTEN & SONS	6	7	8	9	10
1	1	$\frac{15}{32}$	$\frac{9}{32}$	$\frac{7}{32}$		$\frac{6}{32}$	$\frac{5}{32}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{3}{32}$
2	2	$\frac{27}{32}$	$\frac{16}{32}$	$\frac{13}{32}$		$\frac{11}{32}$	$\frac{9}{32}$	$\frac{1}{4}$	$\frac{7}{32}$	$\frac{6}{32}$
3	3	$\frac{14}{16}$	$\frac{13}{16}$	$\frac{5}{8}$		$\frac{1}{2}$	$\frac{7}{16}$	$\frac{11}{32}$	$\frac{5}{16}$	$\frac{9}{32}$
4	4	$\frac{21}{32}$	$\frac{11}{16}$	$\frac{13}{16}$		$\frac{21}{32}$	$\frac{9}{16}$	$\frac{15}{32}$	$\frac{13}{32}$	$\frac{3}{8}$
5	5	$\frac{21}{16}$	$\frac{5}{16}$	1		$\frac{13}{16}$	$\frac{11}{16}$	$\frac{9}{16}$	$\frac{1}{2}$	$\frac{7}{16}$
6	6	$\frac{21}{2}$	$\frac{15}{8}$	$\frac{13}{16}$		$\frac{31}{32}$	$\frac{13}{16}$	$\frac{11}{16}$	$\frac{5}{8}$	$\frac{9}{16}$
7	7	$\frac{29}{32}$	$\frac{17}{8}$	$\frac{13}{8}$		$\frac{11}{8}$	$\frac{15}{16}$	$\frac{13}{16}$	$\frac{9}{16}$	$\frac{5}{8}$
8	8	$\frac{35}{16}$	$\frac{21}{8}$	$\frac{19}{16}$		$\frac{11}{4}$	$\frac{11}{16}$	$\frac{29}{32}$	$\frac{13}{16}$	$\frac{23}{32}$
9	9	$\frac{23}{32}$	$\frac{21}{32}$	$\frac{13}{16}$		$\frac{7}{16}$	$\frac{3}{16}$	1	$\frac{29}{32}$	$\frac{13}{16}$
10	10	$\frac{41}{8}$	$\frac{21}{16}$	2		$\frac{9}{16}$	$\frac{5}{16}$	$\frac{11}{8}$	1	$\frac{29}{32}$
11	11	$\frac{41}{2}$	$\frac{215}{16}$	$\frac{23}{16}$		$\frac{13}{4}$	$\frac{7}{16}$	$\frac{11}{4}$	$\frac{3}{32}$	1
12	12	$\frac{415}{16}$	$\frac{33}{16}$	$\frac{23}{8}$		$\frac{17}{8}$	$\frac{9}{16}$	$\frac{13}{8}$	$\frac{13}{16}$	$\frac{11}{16}$
13	13	$\frac{53}{8}$	$\frac{37}{8}$	$\frac{29}{16}$		$\frac{21}{16}$	$\frac{22}{32}$	$\frac{15}{32}$	$\frac{15}{16}$	$\frac{5}{32}$
14	14	$\frac{53}{4}$	$\frac{323}{32}$	$\frac{23}{4}$		$\frac{27}{32}$	$\frac{7}{8}$	$\frac{9}{16}$	$\frac{3}{8}$	$\frac{11}{4}$
15	15	$\frac{65}{32}$	4	$\frac{231}{32}$		$\frac{23}{8}$	2	$\frac{11}{16}$	$\frac{11}{2}$	$\frac{11}{32}$
16	16	$\frac{619}{32}$	$\frac{41}{4}$	$\frac{35}{32}$		$\frac{217}{32}$	$\frac{21}{8}$	$\frac{13}{16}$	$\frac{19}{32}$	$\frac{7}{16}$
17	17	$\frac{7}{32}$	$\frac{47}{32}$	$\frac{36}{16}$		$\frac{211}{16}$	$\frac{21}{4}$	$\frac{15}{16}$	$\frac{11}{16}$	$\frac{11}{2}$
18	18	$\frac{73}{8}$	$\frac{425}{32}$	$\frac{39}{16}$		$\frac{227}{32}$	$\frac{23}{8}$	$\frac{21}{32}$	$\frac{25}{32}$	$\frac{19}{32}$
19	19	$\frac{713}{16}$	$\frac{51}{16}$	$\frac{33}{4}$		3	$\frac{21}{2}$	$\frac{21}{8}$	$\frac{17}{8}$	$\frac{11}{16}$
20	20	$\frac{81}{4}$	$\frac{516}{16}$	$\frac{331}{32}$		$\frac{33}{16}$	$\frac{221}{32}$	$\frac{21}{4}$	2	$\frac{25}{32}$
21	21	$\frac{85}{8}$	$\frac{519}{32}$	$\frac{45}{32}$		$\frac{311}{32}$	$\frac{213}{16}$	$\frac{23}{8}$	$\frac{21}{16}$	$\frac{17}{8}$
22	22	$\frac{91}{16}$	$\frac{527}{32}$	$\frac{48}{8}$		$\frac{31}{2}$	$\frac{215}{16}$	$\frac{21}{2}$	$\frac{3}{16}$	$\frac{15}{16}$
23	23	$\frac{97}{16}$	$\frac{63}{32}$	$\frac{49}{16}$		$\frac{321}{32}$	$\frac{31}{16}$	$\frac{219}{32}$	$\frac{9}{32}$	$\frac{21}{32}$
24	24	$\frac{97}{8}$	$\frac{63}{8}$	$\frac{43}{4}$		$\frac{313}{16}$	$\frac{31}{8}$	$\frac{211}{16}$	$\frac{23}{8}$	$\frac{21}{8}$
25	25	$\frac{109}{32}$	$\frac{65}{8}$	$\frac{415}{16}$		$\frac{315}{16}$	$\frac{35}{16}$	$\frac{213}{16}$	$\frac{27}{16}$	$\frac{23}{16}$

CONTENTS IN GALLONS **OF CYLINDRICAL TANKS** **AT ONE FOOT IN DEPTH**

Diam- eter	Gallons	Diam- eter	Gallons	Diam- eter	Gallons	Diam- eter	Gallons
				Ft. In.	1' Depth	Ft. In.	1' Depth
1 in.	.0408	6 1/2	1.7255	1	5.873	4 8	127.91
1/8	.0516	5/8	1.7924	1 1	6.892	4 9	132.52
1/4	.0638	3/4	1.8607	1 2	7.994	4 10	137.21
3/8	.0771	7/8	1.9303	1 3	9.176	4 11	142.05
1/2	.0918	7 in.	2.0011	1 4	10.441	5	146.83
5/8	.1078	1 1/8	2.0732	1 5	11.786	5 1	151.77
3/4	.1250	1 1/4	2.1466	1 6	13.215	5 2	156.78
7/8	.1435	1 3/8	2.2213	1 7	14.724	5 3	161.88
2 in.	.1633	1 1/2	2.2972	1 8	16.314	5 4	167.06
1 1/8	.1843	5/8	2.3744	1 9	17.987	5 5	172.33
1 1/4	.2067	3/4	2.4529	1 10	19.741	5 6	177.67
1 3/8	.2303	7/8	2.5327	1 11	21.483	5 7	183.09
1 1/2	.2552	8 in.	2.6137	2	23.494	5 8	188.60
5/8	.2814	1 1/8	2.6960	2 1	25.491	5 9	194.19
3/4	.3088	1 1/4	2.7797	2 2	27.572	5 10	199.86
7/8	.3375	1 3/8	2.8645	2 3	29.734	5 11	205.61
3 in.	.3675	1 1/2	2.9507	2 4	32.697	6	211.44
1 1/8	.3987	5/8	3.0381	2 5	34.302	6 3	229.43
1 1/4	.4313	3/4	3.1268	2 6	36.709	6 6	248.15
5/8	.4651	7/8	3.2168	2 7	39.196	6 9	267.61
1 1/2	.5002	9 in.	3.3040	2 8	41.766	7	287.82
5/8	.5366	1 1/8	3.4005	2 9	44.417	7 3	308.72
3/4	.5742	1 1/4	3.4944	2 10	47.150	7 6	330.38
7/8	.6132	1 3/8	3.5895	2 11	49.965	7 9	352.76
4 in.	.6534	1 1/2	3.6858	3	52.861	8	375.90
1 3/8	.6949	5/8	3.7834	3 1	55.838	8 3	399.76
1 1/4	.7376	3/4	3.8824	3 2	58.897	8 6	424.36
1 3/8	.7817	7/8	3.9825	3 3	62.038	8 9	449.21
1 1/2	.8270	10 in.	4.0840	3 4	65.260	9	475.75
5/8	.8736	1 1/8	4.1867	3 5	68.519	9 3	502.55
3/4	.9214	1 1/4	4.2908	3 6	73.150	9 6	530.08
7/8	.9705	1 3/8	4.3960	3 7	75.416	9 9	558.35
5 in.	1.0210	1 1/2	4.5026	3 8	78.965	10	587.35
1 1/8	1.0727	5/8	4.6105	3 9	82.595	10 3	617.08
1 1/4	1.1256	3/4	4.7196	3 10	86.307	10 6	647.55
3/8	1.1798	7/8	4.8284	3 11	90.100	10 9	678.27
1 1/2	1.2354	11 in.	4.9417	4	93.975	11	710.69
5/8	1.2922	1 1/8	5.0546	4 1	97.931	11 3	743.36
3/4	1.3502	1 1/4	5.1689	4 2	101.970	11 6	776.77
7/8	1.4096	1 3/8	5.2843	4 3	103.030	11 9	810.91
6 in.	1.4702	1 1/2	5.4011	4 4	110.290	12	848.18
1 3/8	1.5321	5/8	5.5192	4 5	114.573	12 3	881.39
1 1/4	1.5953	3/4	5.6385	4 6	118.938	12 6	917.73
3/8	1.6597	7/8	5.7591	4 7	123.383	12 9	954.81

FAMILIAR FACTS

To find circumference of a circle multiply diameter by 3.1416.

To find diameter of a circle multiply circumference by .31831.

To find area of a circle multiply square of diameter by .7854.

To find area of a triangle multiply base by $\frac{1}{2}$ perpendicular height.

To find surface of a ball multiply square of diameter by 3.1416.

To find solidity of a sphere multiply cube of diameter by .5236.

To find side of an equal square multiply diameter by .8862.

To find cubic inches in a ball multiply cube of diameter by .5236.

Doubling the diameter of a pipe increases its capacity four times.

A gallon of water (U. S. standard) weighs 8 pounds $\frac{1}{3}$ ounces and contains 231 cubic inches.

A cubic foot of water contains $7\frac{1}{2}$ gallons, 1,728 cubic inches, and weighs $62\frac{1}{2}$ pounds.

To find the pressure in pounds per square inch of a column of water multiply the height of the column in feet by .434.

Steam rising from water at its boiling point (212 degrees) has a pressure equal to the atmosphere (14.7 pounds to the square inch).

A standard horse power. The evaporation of 30 pounds of water per hour from a feed water temperature of 100 degrees F. into steam at 70 pounds gauge pressure.

To find capacity of tanks any size; given dimensions of a cylinder in inches, to find its capacity in U. S. gallons: Square the diameter, multiply by the length and by .0034.

To ascertain heating surface in tubular boilers multiply $\frac{2}{3}$ the circumference of boiler by length of boiler in inches and add to it the area of all the tubes.

One-sixth of tensile strength of plate multiplied by thickness of plate and divided by one-half the diameter of boiler gives safe working pressure for tubular boilers. For marine boilers add 20 per cent for drilled holes.

UNITS FOR APPROXIMATING WEIGHTS OF VARIOUS METALS

BARS AND PLATES

IRON. Multiply contents in cubic inches by .27777.
Result will be weight in pounds.

STEEL. Multiply contents in cubic inches by .28332.
Result will be weight in pounds.

COPPER. Multiply contents in cubic inches by .32118.
Result will be weight in pounds.

BRASS. Multiply contents in cubic inches by .3112.
Result will be weight in pounds.

LEAD. Multiply contents in cubic inches by .41015.
Result will be weight in pounds.

ZINC. Multiply contents in cubic inches by .25318.
Result will be weight in pounds.

TIN. Multiply contents in cubic inches by .26562.
Result will be weight in pounds.

ALUMINUM. Multiply contents in cubic inches
by .09375. Result will be weight in pounds.

BAR STEEL. Find area of one end, add a cipher
and divide by 3 to get weight in pounds per lineal foot.

COMMON NAMES OF CHEMICAL SUBSTANCES

Common Names	Chemical Names
Aqua Fortis.....	Nitric Acid. ✓
Aqua Regia.....	Nitro-Muriatic Acid.
Blue Vitriol.....	Sulphate of Copper.
Cream of Tartar.....	Bitartrate Potassium.
Calomel.....	Chloride of Mercury.
Chalk.....	Carbonate of Calcium.
Salt of Tartar.....	Carbonate of Potassa.
Chloroform.....	Chloride of Gormyle.
Common Salt.....	Chloride of Sodium.
Copperas, or Green Vitriol.....	Sulphate of Iron.
Corrosive Sublimate.....	Bi-Chloride of Mercury.
Diamond.....	Pure Carbon.
Dry Alum.....	Sulph. Aluminum and Potassium.
Epsom Salts.....	Sulphate of Magnesia.
Fire Damp.....	Light Carburetted Hydrogen.
Glauber's Salt.....	Sulphate of Sodium.
Glucose.....	Grape Sugar.
Iron Pyrites.....	Bi-Sulphide Iron.
Jeweler's Putty.....	Oxide of Tin.
King's Yellow.....	Sulphide of Arsenic.
Laughing Gas.....	Protoxide of Nitrogen.
Lime.....	Oxide of Calcium.
Muriate of Lime.....	Chloride of Calcium.
Nitre of Saltpetre.....	Nitrate of Potash.
Oil of Vitriol.....	Sulphuric Acid.
Potash.....	Oxide of Potassium.
Realgar.....	Sulphide of Arsenic.
Red Lead.....	Oxide of Lead.
Rust of Iron.....	Oxide of Iron.
Salmoniac.....	Muriate of Ammonia.
Slacked Lime.....	Hydrate Calcium.
Soda.....	Oxide of Sodium.
Spirits of Hartshorn.....	Ammonia.
Spirit of Salt.....	Hydro-Chloric or Muriatic Acid.
Stucco, or Plaster of Paris.....	Sulphate of Lime.
Sugar of Lead.....	Acetate of Lead.
Verdigris.....	Basic Acetate of Copper.
Vermillion.....	Sulphide of Mercury.
Vinegar.....	Acetic Acid (diluted).
Volatile Alkali.....	Ammonia
Water.....	Oxide of Hydrogen.
White Precipitate.....	Ammoniated Mercury.
White Vitriol.....	Sulphate of Zinc.

WEIGHT TABLES

AVOIRDUPOIS WEIGHT

27 $\frac{11}{32}$	grains (gr.)	= 1 dram	(dr.)
16	drams	= 1 ounce	(oz.)
16	ounces	= 1 pound	(lb.)
2000	pounds	= 1 short or net ton	(nt. tn.)
2240	pounds	= 1 long or gross ton	(gr. tn.)
Grain same as Troy and Apothecaries			

TROY WEIGHT

24	grains (gr.)	= 1 pennyweight	(dwt.)
20	pennyweight	= 1 ounce	(oz.)
12	ounces	= 1 pound	(lb.)

CIRCULAR MEASURE

60	seconds (")	= 1 minute	(')
60	minutes	= 1 degree	(°)
360	degrees	= 1 circumference	

TIME MEASURE

60	seconds (s.)	= 1 minute	(m.)
60	minutes	= 1 hour	(h.)
24	hours	= 1 day	(d.)
28, 29, 30, or 31	days	= 1 month	(mo.)
(30 days)	= 1 month in computing interest		
365	days	= 1 year	(yr.)
366	days	= 1 leap year	

EQUIVALENTS

1	gallon	= 231.00	cu. in.
1	gallon	= .13368	cu. ft.
1	bushel	= 2150.42	cu. in.
1	bushel	= 1.2445	cu. ft.
1	bushel	= .046091	cu. yd.
1	cord	= 128.00	cu. ft.
1	cubic foot	= 7.4805	gal.
1	cubic foot	= .80356	bu.
1	cubic yard	= 21.696	bu.
1	long or gross ton	= 1.1200	nt. tn.
1	short or net ton	= .89286	gr. tn.

WATER

1	pound	= .01602	cu. ft.
1	pound	= .1198	gal.
1	cubic foot	= 62.43	lb.
1	gallon	= 8.345	lb.
Pressure per foot depth		= .4335 lb. per sq. in.	

MEASURE TABLES

LONG MEASURE

12	inches (in.)	= 1 foot	(ft.)
3	feet	= 1 yard	(yd.)
5½	yards	= 1 rod	(rd.)
40	rods	= 1 furlong	(fur.)
8	furlongs	= 1 statute mile	(mi.)

SURVEYOR'S LONG MEASURE

7.92	inches (in.)	= 1 link	(li.)
25	links	= 1 rod	(rd.)
4	rods	= 1 chain	(ch.)
10	chains	= 1 furlong	(fur.)

SQUARE MEASURE

144	square inches (sq. in.)	= 1 square foot	(sq. ft.)
9	square feet	= 1 square yard	(sq. yd.)
30¼	square yards	= 1 square rod	(sq. rd.)
160	square rods	= 1 acre	(A.)
640	acres	= 1 square mile	(sq. mi.)

SURVEYOR'S SQUARE MEASURE

625	square links (sq. li.)	= 1 square rod	(sq. rd.)
16	square rods	= 1 square chain	(sq. ch.)
10	square chains	= 1 acre	(A.)

CUBIC MEASURE

1728	cubic inches (cu. in.)	= 1 cubic foot	(cu. ft.)
27	cubic feet	= 1 cubic yard	(cu. yd.)

DRY MEASURE

2	pints (pt.)	= 1 quart	(qt.)
8	quarts	= 1 peck	(pk.)
4	pecks	= 1 bushel	(bu.)

LIQUID MEASURE

60	minims (min.)	= 1 fluid dram	(fl. dr.)
8	fluid drams	= 1 fluid ounce	(fl. oz.)
4	fluid ounces	= 1 gill	(gi.)
4	gills	= 1 pint	(pt.)
2	pints	= 1 quart	(qt.)
4	quarts	= 1 gallon	(gal.)

SPECIFIC GRAVITIES AND WEIGHTS

Metals	Pound per Cu. In.	Pounds per Cu. Ft.	Specific Gravity
Aluminum—Cast .....	.092	159	2.55
Aluminum—Hammered .....	.099	172	2.75
Aluminum—Rolled .....	.098	169	2.70
Aluminum—Wire .....	.098	169	2.70
Aluminum—Bronze .....	.278	481	7.70
Antimony .....	.242	418	6.70
Bismuth .....	.354	612	9.80
Brass, .70 Cu, .30 Zn—Cast .....	.293	506	8.10
Brass, .70 Cu, .30 Zn—Rolled .....	.307	531	8.50
Brass, .85 Cu, .15 Zn—Rolled .....	.309	534	8.55
Bronze, .90 Cu, .10 Sn .....	.318	549	8.80
Cadmium .....	.313	540	8.65
Cobalt .....	.314	543	8.70
Copper—Cast .....	.314	543	8.70
Copper—Hammered .....	.323	559	8.95
Copper—Rolled .....	.322	556	8.90
Copper—Wire .....	.323	559	8.95
Gold .....	.697	1205	19.30
Iron—Gray Pig .....	.257	443	7.10
Iron—White Pig .....	.275	474	7.60
Iron—Wrought .....	.278	480	7.70
Iron—Steel .....	.283	490	7.85
Iron—Pure .....	.285	493	7.90
Lead—Cast .....	.410	709	11.35
Lead—Rolled .....	.412	712	11.40
Magnesium .....	.063	109	1.75
Mercury .....	.491	849	13.60
Monel Metal .....	.320	552	8.85
Nickel .....	.318	549	8.80
Platinum .....	.777	1342	21.50
Silver .....	.379	656	10.50
Tin—Cast .....	.264	456	7.30
Tin—Rolled .....	.271	468	7.50
Tungsten .....	.683	1180	18.90
Zinc—Cast .....	.253	437	7.00
Zinc—Rolled .....	.260	449	7.20

HEAT COLORS

Appropriate Temperature Degrees Fahrenheit	Color in Full Daylight
430	Pale Yellow
450	Straw
470	Dark Straw
500	Brown Yellow
530	Light Purple
550	Purple Blue
560	Blue
580	Polish Blue
600	Deep Blue
900	Faint Red
1050	Blood Red
1175	Dark Cherry
1250	Medium Cherry
1375	Cherry or Full Red
1550	Bright Red
1650	Salmon
1725	Orange
1825	Lemon
1975	Light Yellow
2200	White

MELTING POINTS

	Centigrade Degrees	Fahrenheit Degrees
Tin	232	450
Bismuth	269	516
Cadmium	322	612
Lead	327	621
Zinc	419	786
Antimony	630	1166
Magnesium	632	1170
Aluminum	657	1225
Calcium	780	1436
Barium	850	1562
Silver	962	1764
Gold	1064	1947
Copper	1065	1949
Cast Iron—White	1075	1967
Cast Iron—Gray	1275	2327
Steel	1375	2507
Nickel	1465	2637
Platinum	1780	3236

DEFINITIONS OF COMMON TERMS

Alloy

An Alloy is a compound of two or more metals.

Conductivity

The power of the material to conduct heat.

Ductility

The proportionate ease with which the material can be drawn out as into wire.

Elastic Limit

The maximum stress a material can bear without permanent distortion.

Elongation

The increase in length which a metal bar undergoes when subjected to a tensile stress sufficient to cause fracture.

Fusibility

The melting temperature of the material.

Malleability

Ability of the material to be hammered into different shapes.

Metallic Luster

The power of reflecting light rays.

Reduction of Area

The amount of contraction of area which takes place at the point of fracture when a metal bar is broken by a direct pulling force.

Tenacity

The strength or the resistance offered by a body to Forces tending to pull its particles asunder.

Tensile Strength

The maximum load material can sustain without breaking.

Steel

A chemical compound of iron and carbon. Its tensile strength is greater than that of wrought iron.

DEFINITIONS OF COMMON TERMS

Steel, unlike wrought iron, is fusible; unlike cast iron, it can be forged, and with the exception of the higher grades it can be welded by heating and hammering.

Carbon in Steel

The carbon content effects the tensile strength, which is made greater by increasing the amount of carbon.

Sulphur in Steel

Cracks are liable to develop during rolling, when sulphur is over .06, which are inperceptible in the finished material, but which may later form starting points for rupture when material is subject to sudden stress. For threading and screw machine work, sulphur content is increased to about .075 to .10.

Phosphorus in Steel

Produces brittleness, on account of its treacherous nature it may be stated that the lower the phosphorus, the better the grade of the steel.

Manganese in Steel

Manganese is added in the making of steel to offset the tendency to crack. Ordinary grades of steel range from about .30 to .60.

Silicon in Steel

Silicon present in steel is generally very slight and therefore seldom is considered as of any importance.

PAINTING METAL

Many different types of paint have been offered for the protection of metal buildings. Some of these are almost worthless, while other have, in most cases, given satisfactory results. Among the latter may be mentioned natural oxide of iron ground in pure linseed oil. Recent careful investigations, however, have demonstrated conclusively that the very best results in painting unprotected sheets are obtained by using as the first coat, red lead (containing not less than 85 per cent $Pb_4 O_3$) ground in pure linseed oil. For the second coat part of the red lead may be replaced by carbon black or some other inert pigment, and the third or top coat may be any good moisture excluder, such as graphite. It is important that the first coat, or the coat next to the bare metal, be of a basic nature, and red lead has been found to be one of the best basic pigments.

In painting galvanized sheets, inasmuch as the zinc coating is electro-positive to the base material, which is in itself an additional protection, it is perhaps not so important that red lead be used, and first quality iron oxide ground in linseed oil is, therefore, recommended for painting galvanized sheets. It is a well known fact that if paint is applied to new galvanized sheets, it is almost certain to peel off. It is therefore, important that the surface be slightly roughened before applying the first coat of paint. This is best accomplished by exposing the sheets to natural weather conditions for a period of from six to twelve months, before painting.

It is economy to use only good grades of paint. Always use good brushes, rub the paint well on, and do not spread it out too thin. Roofs, and sheet metal work should be kept well painted—the intervals depending largely upon climatic conditions. After the initial coats, as above described, paints may harmonize with any desired color scheme.

COLORING COPPER

HOW TO GET ANTIQUE FINISHES

The Copper & Brass Research Association has furnished the following suggestions for coloring copper by the use of solutions. Before coloring it is essential that the metal be freed of oil that was used in the rolling operations. Due to the fine grain structure of the metal, the oil or grease has been rolled into the pores and cleaning cannot be carried out too carefully.

TO CLEAN COPPER

Prepare a strong soda or potash lye solution by adding about a pound of lye to a pail of boiling water. Dip the metal or apply this solution with a brush, scrubbing well. Then rinse or wash with plain hot water and finally with cold water.

NATURAL GREEN

Copper, when exposed to the atmosphere, will develop verdigris (green) after a time, due to natural phenomena, especially along the sea coast.

To quickly develop this beautiful green "patina" that is so striking and permanent, use one of the following methods:

(a) Use a solution of $\frac{1}{2}$ pound of salt to 2 gallons of water.

(b) Dissolve thoroughly 1 pound of powdered sal ammoniac in about 5 gallons water and let stand for 24 hours. Apply to copper with a brush, covering every part; let stand one day and then sprinkle surface with clean water.

BROWN—REDDISH BRONZE—BLUE BLACK TONES

If a dark copper or brown tone is desired on copper exposed to the atmosphere, it may be obtained by rubbing the copper with cotton waste soaked in boiled linseed oil. This coating will gradually turn the copper a dark brown and will adhere to the copper surface for a long time.

Another method more suitable for small articles is to thoroughly clean the surface and then use a solution of

Water 160° F.	1 gallon
Sulphuret of potassium or polysulphide	$\frac{1}{8}$ to $\frac{1}{4}$ ounces
Ammonia water 26%	10 drops or preferably purchase a similar solution made up.

Tones develop on copper in the following order—brownish, reddish bronze, bluish black and black. Remove when desired tone is reached and wash thoroughly.

Scouring with pumice and water or oil helps to bring out certain tones. Scratch brushing with a brass wire scratch brush is another means of developing additional tones.

ANTIQUÉ GREEN OXIDIZED EFFECT

After cleansing use solution:

Hot water 160° F.	3 quarts
Muriatic Acid	1 quart
Verdigris Powder	3 pounds
Copper Carbonate	8 ounces
Sal Ammoniac.	3 pounds

Apply lightly to copper, Atmosphere will deepen the green color.

HOW TO FORECAST THE WEATHER

Every roofer and builder is at times more or less interested in immediate weather changes and conditions. The following formula of popular weather signs was adopted a number of years ago by the Farmers' Club of the American Institute:

All storms are progressive, i. e., the entire storm area moves. This motion is in a general easterly direction except in the tropical storms, which generally pass northward along the Atlantic seaboard.

When the temperature falls suddenly, there is a storm east of you. When the temperature rises suddenly, there is a storm to the west or northwest of you. The wind always blows from a region of fair weather toward a region where a storm is forming. Cirrus clouds always move from a region where a storm is in progress toward a region of fair weather. Cumulus clouds always move from a region where a storm is forming. When cirrus clouds are moving rapidly from the north or northeast there will be rain within twenty-four hours no matter how cold it is. When cirrus clouds are moving rapidly from the south or southeast there will be a cold hailstorm on the morrow if it be in the summer, and if it be in the winter there will be a snow storm. Whenever heavy white frost occurs, a storm is forming within 1,000 miles north or northwest of you.

The wind always blows spirally around a storm center, in a direction contrary to the hands of a clock, and generally toward the storm center. When it blows from the north the heaviest rain is east of you; if from the south the heaviest rain is west of you; if from the east the heaviest rain is south of you.

CIRRUS=A form of cloud like spreading wisps or locks of hair.

CUMULUS=A cloud presenting the appearance of irregular rounded heaps.

BRIEF BUSINESS LAWS

If a note is lost or stolen it does not release the maker; he must pay it if the consideration for which it was given and the amount can be proven.

Notes bear interest only when so stated.

Principals are responsible for the acts of their agents.

Each individual in a partnership is responsible for the whole amount of the debts of the firm, except in cases of a special partnership. The word "limited" in connection with a firm name indicates that a limitation of responsibility for each member is fixed.

Ignorance of the law excuses no one.

An agreement without consideration of value is void.

A note made on a Sunday is void, also one dated ahead of its issue. It may be dated back at pleasure.

Contracts made on Sunday cannot be enforced.

A note by a minor is void in some States, and in others it is voidable on judicial decision.

A contract made with a minor, or a lunatic, is void.

A note obtained by fraud or from a person in a state of intoxication cannot be collected. It is a fraud to conceal a fraud. Signatures made with a lead pencil are good in law. The acts of one partner bind the rest.

"Value received" is usually written in a note, and should be, but it is not necessary. If not written it is presumed by the law or may be supplied by proof.

No consideration is sufficient in law if it be illegal in its nature.

Checks or drafts must be presented for payment without unreasonable delay.

An indorsee has a right of action against all whose names were on the bill when he received it.

If the letter containing a protest of non-payment be put into the post-office, any miscarriage does not affect the party giving notice.

Notice of protest may be sent either to the place of business or residence of the party notified.

IN CASE OF ACCIDENTS

The old adage "an ounce of prevention is worth a pound of cure," is quite true with respect to most accidents. Workmen should use care not to take unnecessary risks themselves, or in any way jeopardize the lives of their fellow employees. Be careful—carelessness has cost many lives. In case of accident of a serious nature, secure a physician as soon as possible. This is always the part of wisdom.

Asphyxiation. If patient is not unconscious, give aromatic spirits of ammonia, after having been removed to pure air. Under profound cases, artificial respiration; use the Pulmotor if one is obtainable. Keep patient flat on back.

Burns and Scalds. Cover with cooking soda and lay wet cloths over it. Whites of eggs and olive oil. Olive oil or linseed oil, plain, or mixed with chalk or whiting. Sweet oil and lime-water.

Cinders in the Eye. Roll soft paper up like a lamplighter, and wet the tip to remove. "Rub the other eye."

Cuts, Abrasions. Wash wound with good antiseptic. Keep such a preparation and clean bandages in your shop and tool kit. If artery is cut, compress it above the wound. Blood from an artery is bright red, that from the veins dark.

Drowning. Place patient on back. Pull tongue out, and hold with adhesive cloth to keep from slipping back in throat. Arms should be raised parallel to the sides of the body and brought down on the chest with the circular motion, pressing elbows into the median line at about the pit of the stomach. When patient is able to swallow, administer aromatic spirits of ammonia. Artificial respiration should be continued for an extremely long time, as late results in cases of apparent death are not unheard of.

Electrical Shock. Prolonged artificial respiration, as in drowning. Use of the Pulmotor and Lungmotor, if obtainable.

Epileptic Convulsions. Patient should be placed on back on the floor. Restrain sufficiently so he cannot do himself injury, and some material as folded cloth, cork or heavy lead pencil should be placed between his teeth to keep tongue from being bitten.

Fainting. Place flat on back; allow fresh air and sprinkle water. Rest head low.

IN CASE OF ACCIDENTS (*Continued*)

Stings of Venomous Insects, etc. Apply weak ammonia, oil, salt water, or iodine.

Falls, Concussions and Heavy Blows. Lay patient down, loosen clothing to induce easy breathing, give fresh air, and make patient comfortable until physician arrives.

Fire in One's Clothing. Don't run, especially not downstairs or out-of-doors. Roll on carpet, or wrap in rug or blanket. Keep head down, so as not to inhale flame. If building is on fire, crawl to exits. The clearest air is at floor.

Fractures (Simple). A break of the bone without wound or injury of surrounding structures. **Compound Fractures.** Where there is a wound or opening through the flesh to the fracture. **Treatment.** Place the patient in as comfortable a position as possible, supporting the injured portion upon a pillow, a cushion or a pad of cloth or other material. If clothing is to be taken off remove from the sound part first, being careful to avoid giving pain to the patient by unnecessary handling. Cut the clothing in the seams, if possible. Handle a fractured limb as carefully as you would a delicate piece of china. Do not attempt to set the bone. In a simple fracture where a physician cannot be obtained, whenever possible treat the patient at the spot where found, before attempting any removal. When it is necessary to move the patient to any distance, lay the limb upon a cushioned splint, and apply a bandage to keep the parts quiet and in such a way as to prevent the fragments of bones moving upon one another. In compound fractures before applying the splints, treat the bleeding and dress the wound. A good method in compound fracture is to cover the wound with iodoform gauze. Cover this with absorbent cotton and wrap the whole with the triangular bandage. Apply a splint as in a simple fracture, being careful not to bandage too tightly.

Lightning. Dash cold water over patient.

Poisons. Induce vomiting, and swallow sweet oil or whites of eggs. Acids are antidotes for Alkalies, and vice versa.

Sunstroke. Loosen clothing. Apply ice-cold water to head. Keep head elevated.

Daily Rules of Health. Plenty of fresh air day and night.

Bathe frequently.

Eat regularly.

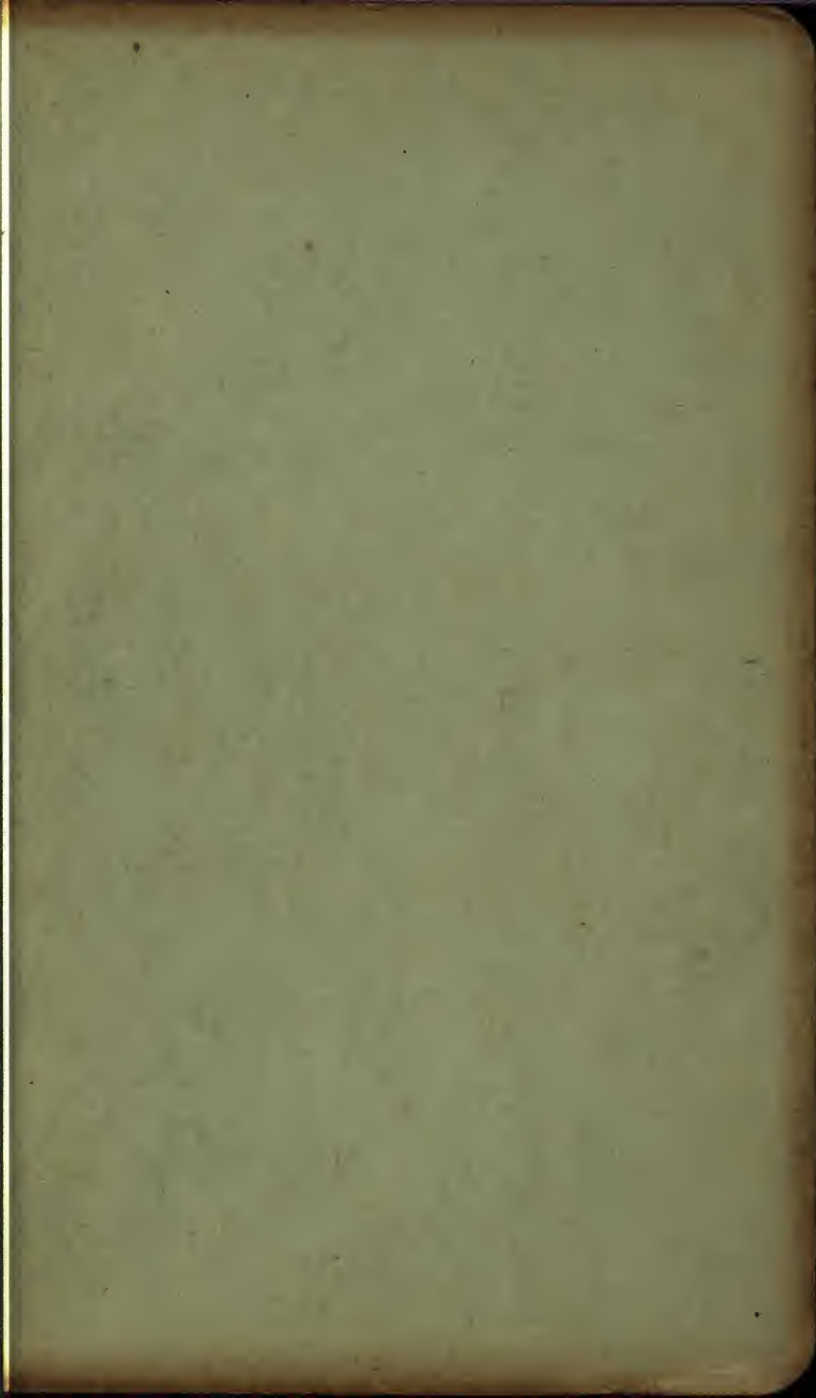
Masticate food thoroughly.

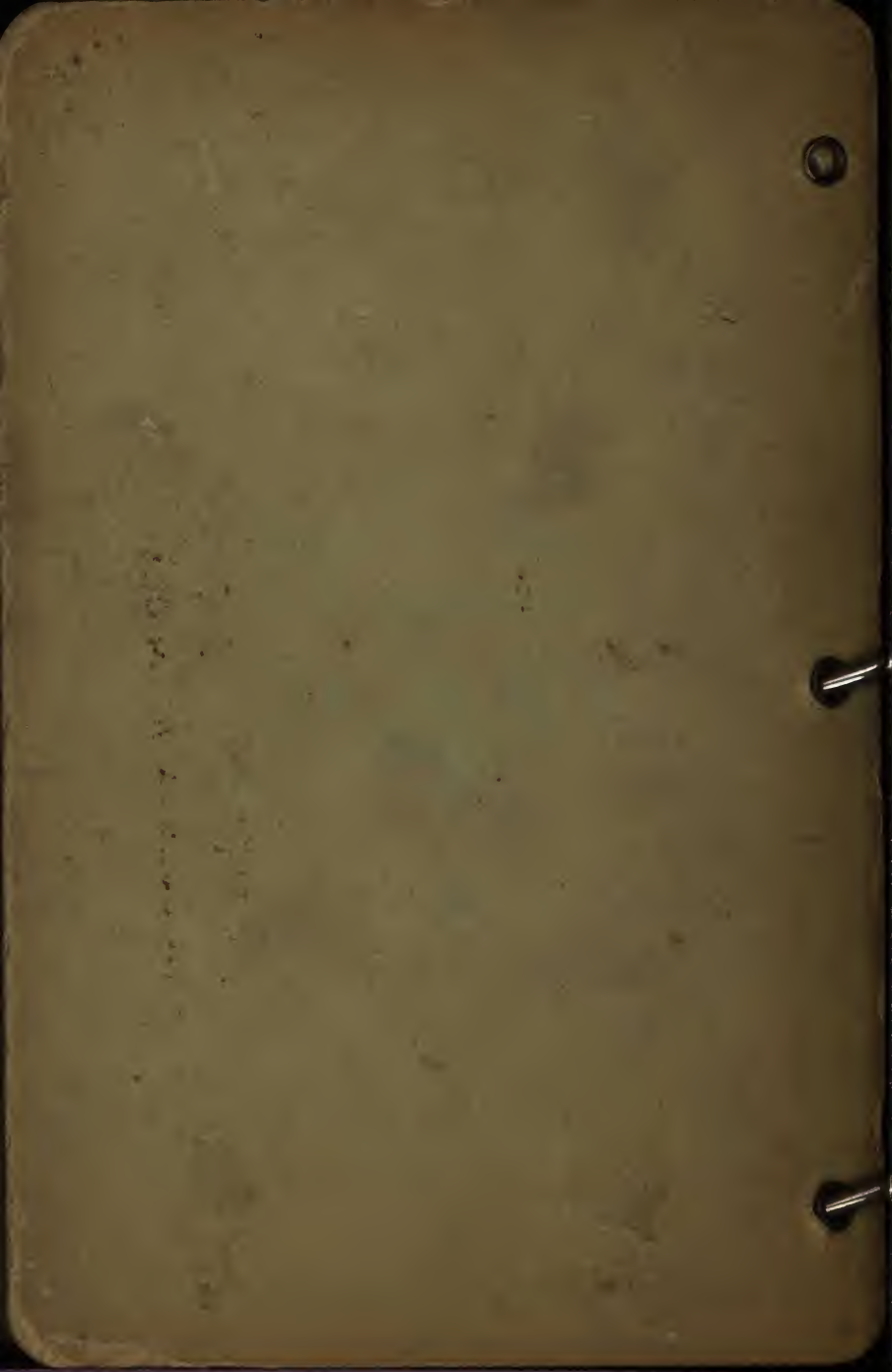
Evacuate bowels daily at regular hours.

Sleep eight hours daily.

Avoid drafts when overheated.

Avoid sitting around with wet clothing.





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